THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
Railway Engineer · TRANSPORT · The Railway News
The Railway Times · Herapath's Railway Journal · RAILWAY RECORD.
RAILWAYS ILLUSTRATED · ESTABLISHED 1835 · Railway Official Gazette

33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1.
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BRISTOL: 8, Upper Berkeley Place, Clifton

Annually £4 10s. by post Single copies, Two shillings.
Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Vol. 97] FRIDAY, OCTOBER 24, 1952 [No. 17

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*An index to the ninety-sixth volume of* THE RAILWAY GAZETTE *covering the issues from January 4 to June 27, 1952, has been prepared, and is now available free of charge on application to the publisher*

## The Transport Bill, 1952

VERY shortly the public and Parliament will have an opportunity of studying and debating the Government's revised Transport Bill. There is good reason to hope that when the text is made known it will show considerable improvement both in matter and draughtsmanship on that which appeared in the summer. Among those who have discussed in public the likely changes to be made in the Bill is Sir Norman Kipping, Director-General of the Federation of British Industries. He said recently that it was possible that the levy on road haulage which the first Bill proposed to provide means of compensating the railways for loss of traffic might be abandoned. If this forecast proves to be correct it will be a decided improvement of itself, for the levy provisions were among the most undesirable in the proposed legislation. Sir Norman Kipping, like many others, looked for considerable changes in railway legislation, particularly, perhaps, in the way of charges. He pointed out that the railways were suffering from the fact that, because they were considered at one time to have a monopoly, they had been surrounded by protections which industry had brought into being to prevent a misuse of their position. He now holds the opinion that it would be right and sensible to put into railways conditions of management which industry would expect to find in a business undertaking. Other suggestions which have been made are that some of the more onerous obligations borne by the railways such as those relating to the maintenance of bridges and approaches may be relaxed. This would be a considerable easement of the financial burden which the railways have to bear.

## Railway Wage Award

THE award earlier this week by the Railway Staff National Tribunal of wage increases for railwaymen falls short of the demand by the three railway trades unions; it had been accepted, as we went to press, by the National Union of Railwaymen. The award, of which details are given elsewhere in this issue, will give another 7s. to adult railwaymen, with corresponding increases for women and younger staff; it will bring the lowest rate for an adult railway worker to £5 17s. 6d. a week; and it represents a 7 per cent increase on the lowest rates, and lesser percentage rises on the higher, typical of which are 4½ per cent for a driver earning £8 1s. 6d. weekly, and 2½ per cent for a special class clerk in the £14 a week range. The cost of the award has not been determined, but £8 million in a full year would appear to be a fair estimate, compared with some £22 million for meeting the unions' claim in full. The claim was based on the rise in the cost of living; it is hard to see how the additional cost of the wage increase can fail to be passed on to transport users in the form of higher railway charges, with resultant inflationary effect, nor indeed when a halt can be called to the succession of resultant demands for higher wages without the exercise of restraint and self-discipline.

## Record Traffic in Uganda

THE goods traffic which the East African Railways handled in Uganda in 1951 was the heaviest in the history of the territory, representing an increase of not less than 100 per cent over the record prewar year of 1938. Separate revenue figures for Uganda are not kept, but the joint totals for the Kenya—Uganda sections in revenue and of goods tonnages and passenger journeys, were as follows:—

| | 1950 | 1951 |
|---|---|---|
| | £ | £ |
| Revenue ... ... ... | 6,905,427 | 8,038,757 |
| Goods tonnages (tons) ... | 2,474,948 | 2,690,310 |
| Passenger journeys (no.) ... | 3,673,193 | 4,039,747 |

Although traffic operations were severely affected by exceptionally heavy rains, 349,134 bales of cotton were hauled by rail to the coast up to November 17, 1951, compared with 339,334 bales the previous year and no shipping opportunities were lost. At Kampala, the newly-completed goods shed and yard, and new sidings at Jinja, Tororo, and Mbale, have proved most useful in handling the increased import traffic.

## United of Havana Capital Reorganisation

AS no offers for the United Railways of the Havana have apparently been received in response to the Cuban Government's call for bids, Mr. R. G. Mills, Chairman of the Company, is on his way to Cuba to ascertain Government intentions, particularly in the light of a provision in a Presidential decree that "the Government shall proceed to clear the way for other solutions," if no proposal of tender is considered satisfactory. The railway, controlled since 1949 by a Government interventor, lost £1,410,936 last year and now has accumulated losses of more than £20,000,000. Some time ago a sale price of £5,000,000 was suggested; this figure does not include the value of the unsecured creditors in Cuba—between £2,000,000 and £3,000,000. The need to move a heavy sugar crop of some 2,000,000 tons over a line whose physical condi-

tion is sadly deteriorating, for reasons set forth in our March 16, 1951 and May 9, 1952 issues, may force the Cuban Government's hand. An obstacle to the speedy negotiation of a sale is the involved financial structure of the company with its ten classes of capital. The board has therefore drawn up a scheme, outlined elsewhere in this issue, to reduce the classes to four, and, if the shareholders accept, will be able to enter into negotiations without referring back to them.

## Using Railways to the Full

THE "cost of living" of railways must be reduced, said Mr. F. Q. den Hollander, President of the Netherlands Railways, in an address to a joint meeting of the Anglo-Netherlands Society and the Institute of Transport in London on Tuesday. It was for this reason that he had decided to electrify his own system as part of its rehabilitation, either buying current from power undertakings or generating it on board diesel-electric units. The decision as to system and voltage had to be made quickly, and the choice of transmission for the diesels could not wait for hydraulic or mechanical alternatives to prove themselves. Up to the present 42 per cent of the system, handling 80 per cent of its business, used electric traction. Not only have these measures reduced coal imports by about a quarter, but they have provided the fast, frequent, and comfortable service which Mr. den Hollander declared to be the only way to increase, or at least stabilise, revenue. Moreover, electric locomotives working 24 hours a day, on goods at night and passenger trains in daytime, and multiple-unit or diesel-electric sets exploiting their quick turn-round, have made the intensive use of expensive railway equipment that is economically essential.

## Economies in Ireland

SOME 145 miles of line are to be permanently closed by Coras Iompair Eireann as one of a number of economy measures aimed to save £550,000. The Board faces a possible loss on working this year of £1,500,000, and it is understood that the Minister of Industry & Commerce does not approve of C.I.E. subsidies running into seven figures—the limit of this year's subsidy is, in fact, £1,300,000. The total amount of Government grants to the undertaking since 1949 is approximately £10,000,000. The lines which it is intended to close are all branches—some of them narrow-gauge, and some not worked for the past five years. Some time ago, as an experiment, C.I.E. ran full rail and road services between two places in County Mayo, but although the rail service showed a slight advantage, the result was not considered conclusive and C.I.E. is apparently satisfied that in general, where traffic is light and the area large, a road transport service is preferable.

## Advertising Relief Trains

EVEN when a well-known train is preceded regularly by a relief at week-ends, it is possible to see the first part go out very lightly loaded while the main service collects crowds in its corridors. At one time the restaurant car on the main train may have explained the preference for it, but the other day passengers with no intention of dining were heard asking a steward if they could ride in the car because they could not find seats elsewhere. This happened on a well-known named express, which perhaps has acquired such prestige that travellers feel they are not getting their money's worth if they use its relief. It is more likely that they have not consulted the timetables, and suspect that the first portion will linger somewhere on the way while the main train speeds past. Loudspeaker announcements might well include a reference to arrival times when reliefs are run, and printed notices at platform barriers on such occasions, showing the timings of both parts, should help further to ensure a fair division of patronage between main and relief services. If posters advertising named expresses also showed their reliefs and the days they run, it would be another contribution towards making these facilities known.

## Train Meal Prices

A RECOMMENDATION by the Central Transport Consultative Committee that cheaper meals be made available in trains even at the cost of a greater deficit on the restaurant car service is based on a feeling that *table d'hôte* meals at a price not prohibitive to the average passenger are an essential amenity of longer railway journeys that contributes to the railways' ability to compete with other forms of passenger transport. The Committee also welcomes the provision of buffet and cafeteria cars and asks that more of these be placed in service as soon as possible. The question of the price of main meals has arisen out of the price increases last June, when the cost of lunch and dinner was raised to 7s. 6d., which has aroused much criticism. The Hotels Executive has quoted the cost of main meals, 8s. 7d., in support of the price increase, but points out that the average loss per meal is 4d. with an average profit of 9d. on drink sales; of the 8s. 7d., 3s. 5d. is for wages—not a surprising figure in view of overtime payment and overnight allowances—and 3s. 1d. for food, which seems high with so many catered for. Even so, acceptance of a loss on train catering is general practice on many railways, restaurant car meals at moderate prices being rightly considered an essential part of the service offered, as they were in Britain before the war. Meanwhile some "refreshment cars" on British Railways provide both a buffet and a full meal service.

## Diesels and Track

ONE important question in the controversy as to the relative merits of steam and diesel-electric locomotives in railway operation, to which as yet there appears to be no conclusive answer, is the effects of the two types of power on permanent way maintenance. It seems reasonable to suppose that the diesel unit, now carried almost universally on bogies, by its flexibility of wheelbase should impose less strain on the track than a powerful steam locomotive, with three or four (or in North America as many as five or six) driving axles carried in a rigid frame. In general, also, the diesel, with all its driving axles motored, and so with its adhesion weight spread out over the full length of the chassis, puts less concentration of weight on the track than a steam locomotive of comparable power. On the other hand, while the track-structure as a whole should benefit by a change from steam to diesel locomotives, the rails themselves may suffer more abrasion from the transmission of power through the small diameter driving wheels of the diesel than through the considerably larger wheels of most steam locomotives. In a recent discussion in *Railway Engineering and Maintenance* it was suggested that dieselisation, with heavier rail, improved maintenance, and better fastenings, should make it possible to increase the distance between sleepers, so suggesting an advantage to the diesel in track maintenance.

## Rigidity of Colour-Light Structures

SOME of the less familiar aspects of signal structure design were discussed by Mr. O. S. Nock in a paper on "Design and Constructional Features of some Modern Signalling Installations" read to the Permanent Way Institution on October 22. He pointed out that the concentrated beam from a colour-light unit makes it necessary to reduce deflection caused by wind pressure to a minimum. Where cantilever brackets have to be used, the towers must be made much stiffer and more massive than would be necessary if normal working pressures were the governing factor. Mr. Nock also quoted an instance where the upward blast of locomotive exhausts had caused deflection of some rather light gantry structures to the extent that drivers reported that "signals were going out." Stiffening members had to be fitted to overcome the trouble. The author drew attention to the most recent development in cantilever brackets for colour-lights as seen in the pre-cast concrete structures on the Southern Region between London Bridge and Forest Hill, where the bracket contour conforms with the structure gauge to economise in height at the side of the track.

### Planning a Signalling Changeover

A SUBJECT of particular interest to a permanent way audience dealt with by Mr. Nock in the lecture referred to in the previous note, was the installation of new point connections. He described recent practice in bringing power-operated points into service before the main changeover from manual to power signalling, putting in power supplies first and then operating the points through circuit controllers fitted to existing point levers. Although such temporary arrangements often called for considerable ingenuity from the installation staff, the final linking up to the new control machine on the opening night involved no more than the removing of fuses from one circuit and putting them into another. He contrasted with this arrangement the one-time practice of bringing numbers of point fitters to the site to fit all points and bring them into service on the actual changeover date, which could cause much anxiety to those responsible when traffic had to be passed through during the transition period. Mr. Nock concluded by recording his appreciation of the help given to himself and his colleagues by permanent way men during the design stages of new schemes and in preliminary work on the site.

### Ten-Coupled Tank Locomotives

A RECENT visit to Germany showed that many of the older 0-10-0 T steam locomotives are still retained in service for heavy shunting. These are the normal designs, and actually none of the large special 2-10-2T of adhesion and rack-and-adhesion types were noted. For the most exacting duties, 0-10-0T engines of the new standard "82" class are in service, but are not numerous; and it be that more service experience is desired before the design is repeated, a view that tends to be strengthened by the news that the coincident standard "23" class 2-6-2 locomotives are being withdrawn in small batches for various modifications. But the most spectacular developments in ten-coupled tank engines, though not widely spread, are formed by the construction of 100/102-ton 0-10-0 tank engines for the lignite railways and steelworks —machines in which nearly every recent German development in design has been applied by builders such as Henschel and Krupp. Among the appliances, designed to give some easing while traversing curves, is the re-discovered Beugniot truck, in which the two outer axles at each end are connected by a simple system of levers. The modern German all-welded boiler with welded threadless firebox stays is another feature of these industrial designs.

## Statement on Cause of Harrow Accident

IN connection with the recent serious accident at Harrow & Wealdstone, L.M.R., the Chief Inspecting Officer of Railways, Lt.-Colonel G. R. S. Wilson, has taken what he described as "a rather unusual step" and, without waiting the time that necessarily must elapse before his report can be published, has announced his main conclusion as to the cause of the disaster. This is that the driver of the up express, which overtook the local train as it was about to leave the station, failed to heed the adverse colour-light distant signal and over-ran at speed the semaphore type outer and inner homes. As a rule, although the published report of the proceedings at an inquiry frequently gives a clue to what an Inspecting Officer must think, the full facts and his findings are not known until the printed report comes out, and at times there may be reasons why an appreciable delay must elapse before that can take place. Now and then, for example, the officer has to wait for some weeks before a witness, whose evidence he considers he should take, is in a fit condition to be interviewed. Ordinarily this does not give rise to comment, but there are occasions when there is more than usual anxiety to know at what conclusion the officer has arrived. The gravity of the Harrow accident was such as to awaken widespread interest and concern, even in other countries, and as there were no grounds for withholding his views, Colonel Wilson put them on record at the close of the second day of the inquiry (reported elsewhere this week). Although he still has to investigate some matters further and hear additional evidence, that cannot influence the general position.

The signalling through Harrow, though not of the character found only where there are continuous track circuits and colour-light signals, is nevertheless of an excellent standard, the block and other controls, as well as the interlocking and track circuiting arrangements, being most complete and affording a remarkably high degree of security against error on the signalman's part. This equipment was installed some years ago, in pursuance of a policy initiated by the L.M.S.R. of obtaining the maximum protection, for a reasonable expenditure, on its important main routes. It was therefore at once apparent to those who knew the position that any risk of a signalling error or breakdown in the working was a remote one, and that the probability was that the source of the catastrophe had to be sought elsewhere. Careful examination and testing showed conclusively that there was nothing wrong with this equipment, which would have afforded full protection to the local train had the signals been obeyed by the express. In addition, it was made clear that there had been no violation of any regulation, itself incapable of being enforced by mechanism, such as accepting the fast train without regard to special fog rules, something which must be left to a signalman's judgment and conscientiousness. There remained thus but one conclusion to which all the circumstances pointed, that this was a plain case of signals being passed unheeded, and a particularly bad one too, for had the driver missed seeing the distant signal for some reason, and for the moment taken a chance and maintained speed, he could have been expected to look all the more carefully for the outer home, which also was well placed, and on sighting it would still have been able to reduce speed considerably; but all witnessses seemed to be agreed that no attempt was made to stop until almost the last moment. There have been quite a number of cases of signals being over-run that never have been explained satisfactorily, and this one seems likely to come into that category.

Colonel Wilson took the opportunity to draw attention to some of the misunderstandings that almost invariably arise in connection with railway accidents among those who fail to realise that the very function of signalling is to guard against the consequences of such things as late running or stopping in section from some unexpected circumstance, and who are to be found declaring, for instance, that pulling the communication chain was the cause of a particular mishap. All will cordially associate themselves with his tribute to those, on and off the railway, who put forth every effort to bring relief to the sufferers under what must have seemed at first to be hopeless conditions, and to the remarkably rapid way in which assistance arrived from all directions.

## Prototype A.T.C. on Trial

EVEN before any statement had appeared indicating the probable cause of the Harrow disaster, public attention had become focused particularly on the question of providing means of ensuring that signal indications shall be obeyed by the drivers for whose guidance they are exhibited. This question is indeed almost as old as signalling itself and thousands of devices have been proposed in an endeavour to solve it, the great majority quite unsuited to the practical requirements of railway service. There are several kinds of signal liable to be disregarded and the conditions under which that can occur themselves are very variable, while, again, the circumstances obtaining on a fast-running main line are materially different from those on electrically-worked lines of the London Underground type. On the ordinary main lines, however, it is of course control over the action of the driver of the fast train that presents the most urgent problem, as any failure on his part in circumstances where a collision must result



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is practically certain to have grave consequences. His task, too, is an exacting one and is made harder still when poor visibility, so often met with in Britain, interferes with observation of the signals. This has been the reason why railways, in this country and elsewhere, who have applied cab signals or automatic train control have, as a rule, done so primarily in connection with distant or other type warning signals, depending on their own particular methods of signalling and types of signal aspect. It has been recognised, nevertheless, as was expressly stated in the Report of the Automatic Train Control Committee issued here in 1922, that such equipment could be valuable at certain other signals; and in some instances, as for example in Switzerland in the case of all starting signals leading to single-line sections, stop signals have been fitted with such mechanism; this is of course universal on the lines of the London Transport Executive, where the conditions cannot be met in any other way.

No competent person will dispute that warning automatic train control at all distant signals would be of real and substantial benefit on our main lines. There is, however, an economic as well as a technical side to the picture, and in the past some have thought that the funds at their disposal would be better utilised in applying track circuiting and colour-light signalling, especially colour-light distant signals, and modern block telegraph controls, than in fitting A.T.C., for the time being at least. Although the Great Western Railway applied its own contact ramp system to distant signals, which dates from before the 1914 war, until by 1938 all its main routes had been fitted, other lines were not unmindful of the question and both the L.M.S.R. and L.N.E.R. began applying equipment not requiring any contact between track apparatus and train, as it was considered that not only was this a more modern and scientific method, but that certain local conditions on their lines precluded the use of a direct contact arrangement, matters on which, we suppose, opinions differed. Supposing all such problems to be satisfactorily resolved, however, there still remained the economic factor, for a heavy expenditure was necessary to instal equipment of even a relatively simple kind. The war interfered with this work, but, the provision of warning A.T.C. being urged by the Inspecting Officers of Railways, the question was taken up as soon as possible thereafter, and finally the Railway Executive made it a matter of first importance. Obviously it was desirable—even essential—to have the same system throughout the country, or there would arise something like a battle of the gauges in another form. Accordingly it was decided to arrange to produce equipment which in effect would embody the engine cab apparatus already used on the Western Region lines, with perhaps some slight modification that appeared beneficial, combined with the magneto-inductive actuation from the track in regular use on the Southend line, formerly part of the L.M.S.R. From time to time the carrying out of tests, in which drivers took part and were asked for their opinions, was announced, but no other details were made public until last week, when, as reported elsewhere, a locomotive fitted with the final prototype equipment was run in the presence of press representatives over the trial section between New Barnet and Huntingdon, where the distant signals have been provided with the necessary track magnet inductors.

It is to be hoped that this question is on the eve of a reasonably final solution and that an encouraging statement will very soon be made. To make any general application of such apparatus will cost today a larger sum than ever, not to speak of the fact that all such mechanism requires to be maintained in proper order and cannot merely be fitted and forgotten. If the authorities consider this work should be carried out, it will be for them to make funds available to the Railway Executive for the purpose. But a word of caution seems to be required. The public must not be led to believe that such apparatus is a cure-all, or that it can provide a remedy for more than certain classes of accident. There are many wrong ideas current on this point, as has been abundantly proved in the last week or two.

## Costing Rail and Road Traffic

LOCAL responsibility and initiative in transport management combined with regulation on a national scale sufficient to ensure a country-wide network of facilities were put forward as the ideal in a paper on Costing Road and Rail Transport read last week to the Western Region London Lecture & Debating Society by Mr. A. W. Tait, Director of Costings, British Transport Commission. He showed that costing was an essential aid to local management in measuring the effects of its decisions, and that it was from management with a knowledge of local circumstances, and not by national edict, that economical transport by rail or road, or a combination of both, must come. Railway grouping and the eventual emergence of British Railways had produced units of accounting so vast that the aggregated figures became nearly meaningless. This, coupled with the challenge to traditional charging principles from competitive road transport, presented problems in choosing between alternative means of transport for different jobs, and created the need for a wider application of costing techniques.

Discussing methods of costing, Mr. Tait referred to the high proportion of the costs both of assets and manpower incurred in time, those varying relatively with distance being relatively unimportant. More than 70 per cent of the costs of train operation, he said, were usually incurred on a time basis. Good use of the time paid for was therefore vital, and speed could be a useful ally in this respect, although cases were not uncommon of time saved by higher speed not being put to any useful purpose. Some examples of use of rolling stock quoted from an analysis made in 1949 showed the importance of studying this aspect of railway operation. The average weekly mileage per unit available at that time was 600 for steam locomotives and passenger coaches in steam service, against the road operators' achievement of an average of about 800 miles per bus licensed per week. Vehicles on electric services showed the more satisfactory figure of 1,350 miles per week, and this lower figure was a contributory factor in the lower average movement cost of 4s. 9d. per train-mile for electric services compared with 8s. for steam. Parcels vehicles travelled on the average 400 miles a week and freight wagons only 85 miles; although not a comparison of like with like, Mr. Tait drew attention to the significant fact that the average cost per mile of freight trains is nearly double that of parcels trains.

Explaining the reasons for the recent rail passenger train survey, Mr. Tait mentioned a provincial suburban service where, despite a fairly satisfactory load factor of 60 passengers per train, cost per passenger-mile worked out at the somewhat high figure of 1·8d. The fare, instead of being at the standard level, averaged 0·6d. because of concessions granted for competitive and social reasons; and the annual loss shouldered by the railways in this single and minor instance was over £50,000 per annum. Such cases, no doubt, could be multiplied up and down the country. Long-distance expresses and intensive suburban electric services were usually profitable, but trains making up the other half of the mileage mostly failed to meet the direct costs of their operation. The main aim of the census taken a fortnight ago had been to focus attention of local officers on those trains or groups of trains which failed to meet certain yardsticks of loading, based on receipts and costs and worked out by the Traffic Costing Service. Subsequent action might take the form of bare revision or reorganisation of services, yet it was probable that a substantial mileage would then remain which could be operated more cheaply by bus, and relief from these unremunerative facilities might enable fares on some paying services to be lowered, leading to a transfer of traffic from road to rail at this end of the scale.

In his analysis of the comparative costs by road or rail for freight traffic, Mr. Tait showed that although the handling and cartage costs for sundries traffic are of the same general order at both rail and road depots, the railway had a distinct advantage in cost for the trunk haul of

such traffic provided transits were between main concentration points where good loadings could be obtained, and expensive pick-up train working and transhipment were avoided.

Mr. Tait emphasised in his conclusion that the local data of the use made of manpower and assets required for further development of costing methods were very different from routine returns rendered to a remote bureaucrat with an appetite for statistics. Such figures were needed to give the man on the spot a clear picture of the work he was doing and the effect of his decisions. Close contact over three years with local officers, both rail and road, gave confidence that once they possessed costing aids, and were given responsibility for using them, the response would be immediate and might well prove to have a profound influence on the future wellbeing and efficiency of British transport.

## British Transport Commission Traffic Receipts

THE returns for the four weeks to October 5 (Period 10) show trends similar to those apparent in the preceding period. The most encouraging figure is the increase in British Railways mineral receipts, which reflects, as did those for Period 9, the increase in the rate of steel production. Coal and coke receipts are disappointing; the improvement over the preceding four weeks is the result of the seasonal increase in coal output after the summer holidays, but failure, in the light of the 10 per cent rate increase on December 31 last, to achieve a figure 10 per cent over that for the corresponding period of 1951, can be attributed, as before, to the shorter rail hauls of coal to ports characteristic of prewar traffic trends to which the railways seem to have reverted, perhaps permanently. The now familiar falling off in merchandise traffic, which has continued for some weeks, appears as before in road haulage receipts.

| — | Four weeks to October 5 | | Incr. or decr. | Aggregate for 40 weeks | | Incr. or decr. |
|---|---|---|---|---|---|---|
| | 1952 | 1951 | | 1952 | 1951 | |
| | £000 | £000 | £000 | £000 | £000 | £000 |
| *British Railways—* | | | | | | |
| Passengers | 8,353 | 8,409 | − 56 | 87,980 | 85,794 | + 2,186 |
| Parcels, etc., by passenger train | 2,867 | 2,621 | + 246 | 27,210 | 25,274 | + 1,936 |
| Merchandise & livestock | 8,121 | 8,044 | + 77 | 79,369 | 75,159 | + 4,210 |
| Minerals | 3,264 | 2,889 | + 375 | 31,635 | 27,208 | + 4,427 |
| Coal & coke | 7,995 | 7,510 | + 485 | 76,572 | 69,047 | + 7,525 |
| | 30,600 | 29,473 | + 1,127 | 302,766 | 282,482 | + 20,284 |
| *British Road Services* | 6,100 | 6,504 | − 404 | 58,373 | 58,636 | − 263 |
| *Road Passenger Transport : Provincial & Scottish—* | | | | | | |
| Buses, coaches & trolleybuses | 4,013 | 3,688 | + 325 | 37,592 | 34,170 | + 3,422 |
| *London Transport—* | | | | | | |
| Railways | 1,378 | 1,256 | + 122 | 13,694 | 12,363 | + 1,331 |
| Buses & coaches | 3,124 | 2,731 | + 393 | 30,189 | 25,874 | + 4,315 |
| Trolleybuses | 712 | 754 | − 42 | 7,344 | 7,487 | − 143 |
| | 5,214 | 4,741 | + 473 | 51,227 | 45,724 | + 5,503 |
| *Inland Waterways—* | | | | | | |
| Tolls | 71 | 69 | + 12 | 733 | 665 | + 68 |
| Freight charges, etc. | 99 | 87 | + 2 | 970 | 845 | + 125 |
| | 170 | 156 | + 14 | 1,703 | 1,510 | + 193 |
| *Total* | 46,097 | 44,562 | + 1,535 | 451,661 | 422,522 | + 29,139 |

British Railways passenger takings show a seasonal drop compared with Period 9; the slight absolute decline against last year cannot be accounted for without the analysis for this period, which will not be available for some weeks. London Transport buses and coaches seem to have done as well as might have been expected from the fare increases in March, bearing in mind the final disappearance of trams in July and assuming transfer of former tram traffic to the substitute bus services. The same seems to be the case with the Underground.

The aggregate for 40 weeks of this year for the activities shown, which produce some 90 per cent of B.T.C. traffic receipts, are 6·8 per cent above the corresponding 40 weeks of 1951; with less than one-quarter of the year to go, and assuming that the prevailing trends continue, total traffic receipts for 1952 should exceed those of 1951 by some £40 million, which is disappointing in view of the increases in rates and fares and the efforts made to capture and to handle additional traffic.

**PERCENTAGE VARIATION 1952 COMPARED WITH 1951**

| | Four weeks to October 5 | 40 weeks to October 5 |
|---|---|---|
| *British Railways—* | | |
| Passengers | − 0·6 | + 2·5 |
| Parcels | + 9·3 | + 7·6 |
| Merchandise & livestock | + 0·9 | + 5·6 |
| Minerals | +12·9 | +16·2 |
| Coal & coke | + 6·4 | +10·8 |
| Total | + 3·8 | + 7·1 |
| *British Road Services* | − 6·2 | + 0·4 |
| *Road Passenger Transport* | + 8·8 | +10·0 |
| *London Transport—* | | |
| Railways | + 9·7 | +10·7 |
| Buses & coaches | +14·3 | +16·6 |
| Trolleybuses | − 5·5 | − 1·9 |
| Total | + 9·9 | +12·0 |
| *Inland Waterways* | + 8·9 | +12·7 |
| *Aggregate* | + 3·4 | + 6·8 |

## Development of the Oil-Fired Locomotive

THE oil-fired locomotive throughout its history of some 70 years has been little more than a compromise, due to the fact that it is invariably a converted coal-fired locomotive modified to burn oil fuel. That this approach to oil-firing had been accepted, was mainly due to the ease of conversion back to oil-firing should the need arise, but at the expense of oil-firing efficiency was the opinion expressed by Mr. W. C. Ikeson, Technical Assistant to the Chief Mechanical Engineer, Iraqi State Railways, in presenting his paper on "Development of the Oil-Fired Locomotive" before the Institution of Locomotive Engineers on October 22.

The Iraqi State Railways operate a metre-gauge section, Basra-Baghdad-Kirkuk-Erbil, and a standard gauge section Baghdad-Mosul-Tel Kotchek, all locomotives of both sections are coal-fired engines converted to burn oil-fuel, except the "PC" class locomotives built by Robert Stephenson & Hawthorns Limited in 1941; the locomotives were described and illustrated in our August 15, 1941, issue. The "PC" class engines use superheated steam for atomisation, and consume approximately 4½ gal. (40 lb.) of fuel oil per train mile. The fuel oil used has a calorific value of 19,250 B.Th.Us., and a specific gravity of 0·869, equal to 250 gal. to the ton.

The oil firing system developed on the Iraqi State Railways is based on the Mexican trough principle and the use of superheated steam for atomising, the use of which makes it necessary to provide an uninterrupted steam supply to the manifold and burner. This was arranged by having the regulator on the superheated side of the header. The superheated steam is taken direct from the header in the smokebox to the oil-firing steam manifold at the back of the firebox, where the connections for the atomiser, heater blowback valve and so on are made. This arrangement provides a small but constant circulating steam supply through the elements when the regulator is closed.

Oil heating is not necessary on the Iraqi State Railways locomotives, but with the equipment as designed a crack of steam from the blowback valve can be used for heating the fuel oil direct in the supply pipe during extreme weather conditions. Improvements have been made in design since the first oil-fired locomotive first made its appearance, although the firebox retains the orthodox coal-burning design, whether there will be a drastic change to provide a more efficient combustion of fuel oil is a matter of conjecture. This appears to be more a question of economics rather than technicalities.

As Mr. Ikeson pointed out, in some oil producing countries, the problem is sometimes fuel, not water, and to overcome this problem on the Baghdad-Basra section, it was decided to try a condensing tender capable of working a train for 354 miles without taking water *en route*. With this in view an order was placed for a complete condensing tender, with steam turbine, induced draught fan and auxiliaries. There were nine engine failures between June, 1939, and October, 1942, during which the locomotive did some 145,000 km.; in nearly every case the failure was due to trouble connected with the induced draught fan, but owing to a number of factors brought about by the war the locomotive had not the opportunity to demonstrate its real capabilities.

# LETTERS TO THE EDITOR

*(The Editor is not responsible for opinions of correspondents)*

## Publicising Nationalised Industries

September 28

SIR,—In thanking you for your refreshing frankness and candour in the editorial articles on the winter train services of the Southern Region and the Scottish Region in your September 26 issue, in which you firmly point out the truth about the deceleration of the "Golden Arrow" service and the Inverness service respectively, may I draw attention to and deplore the ever growing tendency in nationalised industries to pretence, prevarication, and hypocrisy in announcements to the public.

The same spirit is ever present in the *British Railways Magazine*, where no chance is lost in praising all sections of the railways conciliation staff for their wonderful performance of duty, when the public knows that wholesale pilfering and idleness are still only too common, a natural consequence of an almost total lack of discipline and punishment.

Yours faithfully,

MICHAEL PETO

Dundonnell House, By Garve, Ross-shire

## The Calverton Colliery Branch

October 6

SIR,—It was pleasing to see in your October 3 issue an account of the opening of the new line to Calverton Colliery. This is very refreshing after reading of so many closures lately. It is also pleasing to note that the new line is in Nottinghamshire, a county with more than its share of abandoned railways and one whose railways succumbed early to the road motor.

In the same issue which recorded the birth of this new child it was ironical to read of the impending death of that patriarch among railways, the Canterbury and Whitstable line. The hope has been expressed that the new Calverton branch will see 100 years of life. May it even surpass the 120 years of the Canterbury and Whitstable!

Yours faithfully,

J. F. BURRELL

80, Longmead Avenue, Bristol, 7

## Arc Suppression in Mercury Arc Rectifiers

October 10

SIR,—Referring to the interesting article under this title which appeared in your issue of October 3, I would suggest that the question of whether arc suppression—or, for that matter, other fast methods of protection—should be provided in any given case is one to be settled, like most engineering questions, simply on its merits according to how the magnitude, duration, and frequency of the backfire currents liable to flow compare with the values that the plant is designed to withstand.

For many 600-volt rectifier equipments for railway service it thus turns out, as your correspondent says, that arc suppression is not needed, especially since oil circuit-breakers are readily available with which the fault current can be cleared in approximately 4 cycles total, rather than the 16 cycles quoted in the article. On the other hand, in very large installations it is usually more economical to provide arc suppression than to employ other means for keeping within the safe limits.

The particular type of arc suppression apparatus illustrated in the article is, of course, only one among many, and most rectifier makers have their own individual schemes, each no doubt possessing its own merits. My own company prefers for this purpose a special high-speed mechanical relay, which has been employed in several of the largest pumpless rectifier installations yet built. This scheme has an overall operating time of 1 millisecond (compared with 3·3 milliseconds mentioned in the article), and is thus quick enough to prevent the next anode from firing and contributing to the fault. There is, therefore, a substantial reduction in both the magnitude and the duration of the backfire current. The total time for suppression is usually under 1 cycle, compared with the time of 3 to 4 cycles mentioned by your correspondent.

Yours faithfully,

J. C. READ

Rectifier Engineering Dept.,
British Thomson-Houston Co. Ltd., Rugby

## The Rise of the Diesel Locomotive

October 13

SIR,—Your October 10 article on "U.S.A. Railway Equipment Finance" recorded that during the twelve months to July 31 the railways scrapped 5,776 steam locomotives and set 2,470 diesels to work. The effect of substituting diesels for steam engines is shown by the Interstate Commerce Commission's comparison of the work done by the various types of motive power in 1946, 1951 and the first 7 months of 1952. The table below gives for the three periods (lettered A, B and C respectively) the percentage of gross ton-miles in road freight service, car miles in passenger train service and shunting engine hours in yard service worked by each type of motive power.

| Type of locomotive | Gross ton-miles A | B | C | Passenger car miles A | B | C | Shunting engine hours A | B | C |
|---|---|---|---|---|---|---|---|---|---|
| Coal-burning steam ... ... | 69 | 36 | 27 | 52 | 19 | 14 | 60 | 26 | 19 |
| Oil-burning steam ... ... | 19 | 10 | 7 | 26 | 12 | 10 | 10 | 5 | 4 |
| Electric ... ... ... ... | 2 | 2 | 2 | 6 | 6 | 6 | 1 | 1 | 1 |
| Diesel-electric ... ... ... | 10 | 52 | 64 | 16 | 63 | 70 | 29 | 68 | 76 |

Since 1946 the steam locomotive has almost faded out, straight electric working has not advanced, and the diesel has flourished like a green bay tree.

One reason for the rise of the diesel in the States is the low cost of its fuel in relation to the work it does. The second table gives comparative fuel costs for the four types of motive power during the first half of 1952, as calculated by the I.C.C.

| Type of locomotive | Cost per 1,000 gross ton-miles | Cost per passenger car-mile | Cost per shunting engine hour |
|---|---|---|---|
| Coal-burning steam ... | 31·5 cents | 5·6 cents | $2·44 |
| Oil-burning steam ... | 39·8 ,, | 4·7 ,, | $3·07 |
| Electric ... ... ... | 29·1 ,, | 3·8 ,, | $1·18 |
| Diesel-electric ... ... | 16·3 ,, | 3·0 ,, | 69·7 cents |

These results go far to explain why the U.S.A. railways are straining their financial resources in their haste to install diesel equipment.

Yours faithfully,

R. BELL

Frognal, N.W.3

# THE SCRAP HEAP

### C.N.R. Report Wins "Oscar"

The Canadian National Railways have won the bronze "Oscar of Industry" for its 1951 annual report. The company's report was among 5,000 entered in an international competition. The trophy will be presented at a banquet in New York on October 28.

### Locusts on the Line

The special railway coach of the Jam Saheb of Nawanagar, Rajpramukh of Saurashtra, was held up for about half an hour by a swarm of locusts near a railway station eight miles from Rajkot. The Jam Saheb was returning to Jamnagar after attending Harijan Day celebrations at Rajkot, when the coach had to be stopped to allow the locust swarm to pass.—*From "The Times."*

### Improving the Breed

A railway public relations executive had occasion once to check over the losses which resulted in a single year from horses, cattle and hogs being killed on the right of way. All the owners of the slaughtered animals had very expensive ideas of the compensation they deserved. After studying the list, the executive finally remarked, "It strikes me that nothing in the world improves the breed of livestock as much as crossing it with a diesel locomotive." —*From "Streamliner."*

### A Belle Revived

A memory to some, and a legend to others, the "Southern Belle" with a Brighton Atlantic at the head has reappeared on Southern Region metals at two weekends recently. The trains, composed of a Marsh Atlantic and eight Pullman cars, were run for members of the Railway Correspondence & Travel Society visiting Brighton for the centenary of the locomotive works. On the first occasion, October 5, the locomotive was No. 32424, *Beachy Head*. The second train, on October 19, was hauled by No. 32425, *Trevose Head*, and is shown in the accompanying illustration.

### Handling the Herd

Two special trains brought 258 Shorthorns into Perth on October 3. The trains started from Millisle in Wigtonshire, and the animals were the world-famous Cruggleton Herd—the largest pedigree herd of the breed in the country—which at a two-day sale in Perth on October 10 and 11 changed hands for £134,176. Many of the animals are going overseas, particularly to the U.S.A., South Africa, and Canada; and the Scottish Region ran a special train on Sunday, October 12, from Perth to Millisle, and to Stranraer, with animals for re-testing. After the sales many of the animals were carried by ordinary passenger and freight train services to all parts of the United Kingdom.

### At the Harrow Accident Inquiry

From time to time railwaymen off duty have sat there for an hour or two, serious men neatly dressed and almost always in blue. They must have been proud of the forthright and extremely competent way in which their colleagues gave their testimony. Nothing could be more reassuring to any member of the public than to hear these working men speaking with such precision and expertness on their trade. The bearing of these witnesses would remove any ideas that the layman might have that the railwaymen today are less proud of their calling and less interested in it than were the "railway servants" of a past generation.—*From "The Manchester Guardian."*

*The "Southern Belle" train near the south end of Balcombe Tunnel on October 19, headed by ex-Brighton Atlantic No. 32425, "Trevose Head"*

### Japanese "Miniature" Sheets

Sheets of small pictures that can be cut out and attached to letters are sold in Japan from time to time in aid of various objects. The "miniature" illustrated was printed and issued under the auspices of the Transportation Ministry in 1947. It was issued to commemorate the 75th anniversary of the opening of the first railway in Japan, between Yokohama and Tokyo (Shinagawa) on October 14, 1872. These "miniatures" are not postage stamps, and the sender must affix an ordinary stamp to his letter as well.

*A locomotive design on a Japanese "miniature sheet" of small pictures for cutting out and affixing to letters*

### Sterling Worth

The interest which has been aroused by the centenary of Kings Cross Station has given rise to some howlers. *Time & Tide*, praising Great Northern locomotives, believes that "Sterling's 'Single Footer' was the loveliest thing that ever ran on British metals," and says that the example of the class preserved at York ran only a few years ago "with all the speed and grace which she showed when she first came from the Darlington shops." One of the Ivatt Atlantics, we are told, may be seen occasionally on the Cambridge line out of Kings Cross, "ousted now by massive, standardised Pacifics, lacking the brave green livery and polished brass of the old Great Northern days but still handsome and still working."

### Signal Lights

Out of a total of about 130,000 signals, 123,000 are still oil-burning, and the utter dependability of oil is a source of pride to the men who have the safety of British Railways constantly in mind. . . . The oil lamps used in signalling are long-burning and last eight days without refilling, and are tended with great care by picked lampmen whose duties are arduous in any weather. In the heat of summer they clamber around the signal gantries, constantly cleaning, trimming and refilling, and in the winter storms they must be ready to keep the tiny flames in perfect condition through fog and snow and bitter winds. The oil used is a premium-grade burning oil, the finest available kerosene.—*From "Esso Magazine."*

# OVERSEAS RAILWAY AFFAIRS

*(From our correspondents)*

## NEW ZEALAND

### Auckland Electrification

The Government has decided to make an immediate start with the preliminary phases of the electrification of the Auckland suburban lines. The work is part of the £20,000,000 development scheme extending from Auckland to Frankton, and the Government intends to carry out the whole of the work as quickly as possible. The construction work will be spread over a number of years as resources of material, labour and finance are available.

## CANADA

### Revenues in June

Revenues of leading railways reached a peak of $93,902,030 in June, an increase of $7,289,048, or 8 per cent, over the June, 1951 figure of $91,612,982. Operating expenses rose $7,187,710, or 9 per cent, to $89,020,211, and operating income dropped to $5,380,392 from $5,871,025 a year ago.

## UNITED STATES

### Diesel Railcars for the New Haven

By far the largest order yet placed for 85-ft. diesel-hydraulic railcars of the Budd "RDC" type is for 26 of these units to be delivered to the New York New Haven & Hartford Railroad. Already the New Haven has eight "RDC" cars in service, and six on order (three "RDC-1s" and three "RDC-3s") for working the Naugatuck Valley line between Bridgeport, Waterbury, and Winsted, Connecticut. On receipt of the latter and the 26 mentioned above, the New Haven, with 40 diesel-hydraulic railcars, will be the largest owner of this type of passenger unit in the country. The New Haven has given the name of "Shoreliners" to its railcars, and those at present in service are working between Boston and Providence, Hartford, and Cape Cod, and also between Worcester, Massachusetts, and New London, Connecticut.

### Central of New Jersey Plans

Following the recent refusal of the United States Supreme Court to review a decision of a New Jersey court that the net railway operating income of the Central Railroad of Pennsylvania must be subject to New Jersey state franchise taxes, in addition to that of the parent company, the Central of New Jersey, the latter is now planning to consolidate the two railways as a single operating unit, to enable what is regarded as duplicate taxation to be abolished. The C.N.J. also has filed with the New Jersey Board of Public Utility Commissioners a petition to discontinue 40 out of its 204 passenger services operating daily from Monday to Friday inclusive in each week, mostly by consolidating pairs of existing trains, and in some instances with substitution of bus facilities for the trains. Less than 10 per cent. of the total C.N.J. passenger service will be affected in this way. The change would make it possible to save about $500,000 annually, though a substantial loss on the company's passenger operation would continue.

## ARGENTINA

### Arrival of New Rolling Stock

The first units corresponding to the 200,000,000 florin purchase agreement signed with Werkspoor of Amsterdam have begun to arrive in Buenos Aires. Five first class and one second class passenger coaches have arrived on the Argentine vessel *Rio Primero* and two more on the Dutch vessel *Alhena*. Subsequent arrivals will be at the rate of eight coaches a month for the moment, increasing to 25 per month later. Final deliveries are expected in 1954.

The order includes the following rolling stock and locomotives: 100 first class and 185 second class coaches, 15 air-conditioned dining cars, 50 air-conditioned "semi-Pullman" coaches, 55 luggage vans, 10 postal vans, 50 diesel-electric shunting locomotives, and 10 electric locomotives, all for broad gauge lines. For metre gauge lines, 33 suburban coaches and 50 diesel-electric shunting locomotives are on order.

## BRAZIL

### Shipment of Canadian-built Diesels

Two 120-ton diesel-electric locomotives, first of an order for 48 under construction by the Montreal Locomotive Works, for the Central Railway of Brazil, were put aboard the *Bowmonte* in Montreal on September 28 for shipment to Santos.

### Diesel Traction on E.F. Noroeste

The Minister for Communications & Public Works has decided to adopt diesel traction on the E.F. Noroeste de Brasil within the State of Sao Paulo. The project for electrification, approved in 1950, has been abandoned. The deficit on the operations of the system last year amounted to £338,114.

### Locomotive Building

The Commission for Economic Development has reported that a proposal of Fried. Krupp A.G. to build locomotives in Brazil is acceptable and should be carried out without delay. In view of the assistance to be given by the Sao Paulo State Government the investment (100,000,000 cruzeiros, or £2,000,000) is modest for a work of such importance, and the expenditure in foreign exchange should not exceed 60 per cent of the total. Official orders placed with Krupp should be extended to Industrias Reunidas de Ferro e Aco (I.R.F.A.), the pioneer national organisation, now in full operation and in process of expanding. The Commission emphasises that as there is an immediate local market for 200 locomotives annually, namely 80 to 90 for replacements and 125 for improvements, government measures in increase national production are justified.

A member of the Commission announced that I.R.F.A. has built eight diesel-electric locomotives, five electric locomotives, and 46 railcars, all in service, ten electric locomotives, ready for delivery to Bahia, and two diesel-hydraulic locomotives to be handed over in December.

## FRANCE

### S.N.C.F. 1951 Results

The Commission appointed to audit the S.N.C.F. accounts for 1951 has just published its report. The final deficit is said to have reached fr.88,000 million in comparison with fr.86,700 million in 1950: the 1951 deficit was approximately equivalent to 25 per cent of the operating receipts, against rather more than 30 per cent in 1950. The fr.88,000 million deficit in 1951 has been analysed and is said to include fr.34,000 million in respect of freight traffic and fr.49,000 million for passenger traffic.

The report affirms that the capital made available for renewals was extremely small in relation to what would be spent by an industrial undertaking of comparable size. The Commission expresses the view that the present situation of the S.N.C.F. is a reflection of the general disequilibrium of the French economy, and that every effort should be made to adapt commercial policy to lead to a more judicious use of all forms of transport. The hope is expressed that with the aid of the financial concessions in the decree of July, 1952 (*see* the August 15 issue) the S.N.C.F. will soon find it possible to wipe out the remaining deficit.

## IRELAND

### C.I.E. Economy Measures

Economies intended to save £550,000 have been announced by C.I.E. All sections of the undertaking are to bear their share of the economy measures, which will enable the company to operate within the £1,300,000 subsidy limit set by the Government for the financial year ending March 31, 1953.

Already, 834 workers from all departments except the road passenger section have been paid off since April 1, and the present strength of the total staff is slightly over 20,000. Economies are

now being made in the Dublin city bus services, and frequencies on some bus routes have been reduced, leaving 60 bus crews redundant.

The Board stated that the Government had intimated that if the company could not economise to the full amount of £550,000, the Government would make up, in the form of an increased subsidy, the difference between that sum and the figure saved.

As part of the £360,000 to be saved in the next six months on the railway services about 145 miles of branch lines are to be closed. The Board has decided to ask the Transport Tribunal for orders to authorise the permanent discontinuance of train services between the following points:—Fermoy-Mitchelstown; Banteer-Newmarket; Clara-Banagher; Goolds Cross-Cashel; Cork-Macroom; Tralee-Dingle; Kilmessan-Athboy; and Schull-Skibbereen. Some of these lines have not been open for traffic since 1947 and others have been open for goods and livestock trains only. Special trains have been operated over all the branches from time to time.

## WESTERN GERMANY

### Railbrake Design Competition

The Western German Minister of Transport has asked the journal *Eisenbahntechnische Rundschau* to organise a competition for the purpose of improving designs for railbrakes, especially of a light- and medium-weight type. The prize is D.M. 45,000 and the competition is open to individuals and companies in Germany and abroad. The judges include senior engineers of the German Federal Railways. Designs must be submitted by February 16, 1953. The conditions are obtainable, at the price of D.M. 10, from *Eisenbahntechnische* Rundschau, Stephanstrasse 8, Darmstadt, Germany.

### Interference with Railway Property

There has recently been a considerable increase in cases of malicious interference with railway working and stealing signalling and operating equipment. In 1950 there were 1,415 cases on the Federal Railways and in 1951, 2,690. The thefts of cables and wires increased over 500 per cent. in the period. There were 339 instances of interference with signal apparatus, 79 of damage to brake parts and 98 of placing obstacles on the track. In 918 instances shots were fired or objects thrown at trains, and the cases of cable and wire damage totalled 1,256. Some derailments resulted but in most cases the result was nothing worse than a traffic delay. Heavy penalties are being imposed for stealing cable and wire. There have also been many thefts of parts of wagons standing in sidings, including even brake valves, which have been removed. These, with thefts of internal parts of passenger vehicles, are not included above.

## SWEDEN

### Section of Underground Opened

The first in-town section, from Lindhagensgatan to Kungsgatan, of the Stockholm underground railway will be opened on October 26. The railway, of which details have appeared in the October 24, 1947, and January 21, 1949 issues, will traverse the central area from west to south; existing and proposed surface lines will run from it to western and southern suburbs.

In 1933 a tunnel section was built between Skanstull and Slussen, south of the central area, and provisionally used by trams. It was then intended that the next piece of construction should be from Slussen northwards through the central area to Kungsgatan and then westwards towards Fridhemsplan and across Tranebergs Bridge to link with western suburban lines at Alvik. Because the alignment between Kungsgatan and Slussen, across the Norrström and Söderström Straits, raised complicated problems of town planning and the projected realignment of the main line, the sequence had to be changed, and the section west, not south, of Kungsgatan was therefore put in hand first.

From the tunnelmouth at Lindhagensgatan to Kungsgatan it is about 2½ miles and there are five underground stations: Fridhemsplan, St. Erikspla n; Odenplan; Radmansgatan; and Kungsgatan. Between Lindhagensgatan and Fridhemsplan the line emerges to cross the Karlbergs Lake on the lower level of the two-tier road bridge (St. Eriks Bridge). On some sections the tunnel has been blasted through rock; on others, particularly the last, which lies below Sveavägen, the line runs in a cut-and-cover tunnel. The line is designed for a maximum speed of about 45 m.p.h. with a minimum curve radius of 10 chains and maximum gradient of 1 in 25. The platforms are 476 ft., designed for 8-car trains.

## Publications Received

*The Caterham Railway.* The Story of a Feud—and its Aftermath. By Jeoffry Spence. South Godstone, Surrey: The Oakwood Press, Tanglewood. 8½ in. × 5½ in. 84 pp. Illustrated. Price 7s. 6d. (In cloth 10s. 6d.)—The 4½-mile branch from Purley to Caterham, which now forms part of the electrified system of the Southern Region of British Railways, originated as an independent undertaking, and was authorised in 1854. It was opened in 1856, and speedily became a bone of contention in the persistent quarrels between the London Brighton & South Coast and the South Eastern Railways, which used the same tracks between London and Redhill. Throughout these disputes, unnecessary inconvenience was caused to passengers, and the finances of the local company suffered severely. In 1859, the Caterham Railway was sold to the South Eastern for less than half the cost of its construction. Mr. Spence has told the story of these unfortunate early years with a fascinating wealth of detail, substantiated by copious references to contemporary reports. He continues with an account of the subsequent development of the Caterham Valley as a residential district, which resulted in the doubling of the branch in 1900, and its electrification in 1928. Details are also given of the unsuccessful promotion of other railways in the district during the early years of this period of growth. Mr. Spence, who is in the fortunate position of an historian writing of his home town, has presented the history of the Caterham Railway in a way that maintains interest at the highest level. His book should be accorded a warm welcome by students of railways.

*Locomotive Rerailing after the Weedon Accident.* Reprinted from *The Railway Gazette*, July 25 and August 1, 1952. London: Tothill Press Limited, 33, Tothill Street, S.W.1. 11½ × 8½ in. Illustrated. Paper covers. Price 5s.—After the 8.20 a.m. Liverpool to Euston express was derailed near Weedon on September 21 last year, the Pacific locomotive and tender had to be recovered from the field into which they had fallen, and with as little damage as possible to the mechanical parts, for the purposes of the Inspecting Officer's inquiry. The methods adopted to solve a problem of unusual difficulty are described, with an account of the planning and co-operation between the departments concerned of British Railways, London Midland Region, that were essential to success. A sleeper platform was built alongside the derailed locomotive, on to which it was rolled by cranes; from the platform an inclined track was laid to the level of the running lines on the bank, and up this the derailed Pacific was hauled by two locomotives with special tackle, and then lifted on to the running lines; the various stages are described in detail, and illustrated with photographs and line drawings.

*Preservation of Railway Sleepers.*—An illustrated booklet issued by Cobra Wood Treatment Limited describes various methods of treating sleepers with Cobra salts to increase their life. It is claimed that a sleeper impregnated with these chemicals will last for a period of between 18 and 30 years. Sleepers can be treated while still in service by brushing on the salts, which penetrate by capillary action to the depth of any moisture present. Treatment by immersion or brushing on is also suitable for sleepers which have been removed from the track for one reason or another while still in a sound condition, and therefore may be re-used at a later date. The preservative destroys fungi.

XUM

# Transport Needs in Tanganyika

*Place of rail and road in development of the southern part of the Territory*

*By C. S. Dunbar, M.Inst.T.,*
*Formerly Transport Officer of the Colonial Development Corporation*

THOSE who have been looking forward to the opening up of south-west Tanganyika will be disappointed that the authors of the report on proposed new railways in East Africa, summarised in your October 3 issue, have contented themselves with urging the government to construct the necessary railways at some vague time in the future rather than make a start now.

In considering Tanganyika to the south of the Central Line, there are two entirely different types of development to be contemplated. The Southern Province, the scene of one of the ground nut schemes, offers great potentialities for agriculture, despite the failure of the Overseas Food Corporation plans in their original form. So does the Kilembaro Valley, which has been only sparsely inhabited since the Germans crushed a native rebellion many years ago. Both areas suffer greatly from bad communications. The main Southern Province road from Lindi to Songea is of earth; many parts become dangerous after heavy showers, and during the rainy season (roughly November-April) it is impossible to get through to Songea at all. As part of the groundnut scheme a railway was built from Nachingwea to Mkwaya at the head of Lindi Creek, and this will eventually reach the new port of Mtwara. At its western end this line is being extended another 70 miles or so to Lumesule Juu, but it cannot be denied that the authors of the report are right in suggesting that better roads would enable agricultural development in the Province to go ahead without the expense of still further railway extensions.

Into the Kilembaro Valley there is already a road of sorts from Kilosa on the Central Line, but its alignment is bad and it can carry only light traffic. It has been agreed in principle that a road shall be constructed on a new alignment which will bridge over the Great Ruaha and be in effect a feeder to the bituminised road now under construction from Dar es Salaam to Morogoro. Also, again, from the point of view of the Kilembaro Valley alone, modernised road communication would suffice.

As one goes westward from the coast at Lindi, the country for the first 300 miles is of an open, undulating appearance with large areas of fairly level plain, but beyond that the mountains close in and the valleys become narrower. West of Songea the main road towards Lake Nyasa continually rises and falls between the 2,500 and 3,500 ft. contours and runs through well-wooded country. At Johannes Bruck it forks; the branch going south-west to Mbamba Bay is extremely hilly, at one point touching 6,000 ft. Until recent years the other branch was available only for motors to Ruanda, but lorries and even a twice-weekly bus now get through in the dry season right down to Lituhi close to the mouth of the Ruhuhu river and the shore of the Lake. It is this road which at present gives the only communication with the coal- and iron-fields on which great hopes for Tanganyika are based.

The presence of minerals in the area has been known for about 60 years, but it was not until the Colonial Development Corporation, at the request of the Tanganyika Government, began prospecting that a serious attempt was made to ascertain the quantities available. The C.D.C. investigation is estimated to cost £350,000, but this will be money well spent if the fields are worked, for coal of good quality has been found in substantial quantities and, moreover, the existence has been confirmed of what may prove to be the largest titaniferous iron ore deposits in the world. The four coalfields lie in the basin of the Ruhuhu river and its tributaries, north-west of Songea. One is in the valley of the Ngaka near Mbuyura, with another about five miles to the south on the Mbalawala. The other two, about 20 miles north of the Ruhuhu, are in the valleys of the Mchuchuma and Kitewaka.

Some 60 miles due north of Mbuyura and still in the valley of the Ruhuhu are the Liganga iron deposits. From the two fields south of the Ruhuhu it is necessary, if one wishes to visit the other two (or indeed to get anywhere), first to go south to Ruanda. From the Ruanda-Lituhi road a raft, constructed of empty drums and capable of carrying only light loads, connects with a rough road to the northern fields.

### Tanganyika Coal Production

So far, the geological team has been mainly concerned with proving the deposits, but a small amount of coal has been extracted and sold locally. If production, is going to be organised on a worthwhile scale, there are two possible stages—first, a target of 500,000 tons a year to meet East African demands and later a stepping-up to 2,000,000 tons, of which three-quarters would be converted into liquid fuels.

Approximately 80 miles north of Mbuyura as the crow flies, but at present unconnected with it by any road, stands the important centre of Njombe and four or five miles down the road from here to Makumbako (which figures prominently in the report) lies the wattle-growing scheme. The site is already served by the East African Railways & Harbours motor service from Dodoma on the Central Line, and it will be possible to dispose of the wattle extract by this route for some years. The timber itself is of little use except for pit-props. There are plans for replacing the Ruhuhu pontoon by an adequate ferry or perhaps a bridge, and extending the road north thereof as an all-weather stretch passing over ancient foot tracks to Njombe. For some years this might serve to convey the wattle props to the pits, but if the railway were built the props would help to balance the movement of the coal. It is planned to cut 3,000 acres with 550 trees to the acre annually from about 1958-59, so that there will be considerable timber available.

On the other side of the lake in Nyasaland we need not, for the purposes of this discussion, concern ourselves with the C.D.C. tobacco farms at Kasungu nor the tung-oil project on the Vipya. The scheme, which depends absolutely on the provision of new transport facilities is that for the afforestation of the Nyika plateau, which lies across the lake almost opposite the mouth of the Ruhuhu. If the pilot scheme now about to be started is successful, within 15 to 20 years the plateau will be producing annually about 1,000,000 tons of pulpwood, which would, in turn, produce about 300,000 tons of pulp. It is uncertain where the mill would be; if it were on the Nyasa side, the production of such a quantity of pulp would need the movement across the lake of about 230,000 tons of coal, plus, possibly, 75,000 tons of limestone and 30,000 tons of salt cake—these latter two items, fortunately, being procurable near the northern end of the lake. If the mill were on the Tanganyika side near the coalfields, there would be the huge quantity of timber plus other ingredients to be moved eastwards. Wherever the mill is to be, the disposal of the pulp will present an insoluble problem if nothing is done about rail and lake communications. It will obviously be necessary to create a sizeable port on both shores of the lake—where at present none exists—and greatly to increase the shipping capacity available.

If it is said that because of these difficulties the Nyika scheme should be abandoned, this does not solve the coal transport problem. The average distance of the fields from the coast is some 450 miles and it will be nearly as far to the Central Line when, and if, the proposed Mchuchuma-Njombe road is built. Even if the roads and bridges were brought up to United Kingdom standards (a most unlikely event), can anyone believe that it would be an economic proposition to move half a million tons of coal a year by road over such a distance and with little or no prospect of return loads?

We have spoken of coal going to the coast, but is there really any point in it going there? The total coal bought for

bunkers in all Tanganyika ports has now dropped to about 25,000 tons a year. Even if this were not so, is it likely that any steamship company would put its vessels into Mtwara solely for the purpose of bunkering? The chances of selling Tanganyika coal overseas are so small that coal certainly does not provide any justification for a further extension westwards of the Southern Province Railway. On the other hand, if the connection with the Central Line could be built, it would be possible to sell bunker coal at Dar es Salaam and at the same time distribute coal all over Tanganyika and even into Uganda, Kenya and the Congo *via* the Great Lakes.

The railways themselves, through conversion to oil-burning, offer a diminishing market for coal. On all counts, the prospects for the coalfields seem better as liquid fuel producers, but, even so, disposal of the products will not be easy. The terrain will make the use of pipelines expensive, and it may, after all, be necessary to have railway facilities and to use tank wagons.

One possibility does suggest itself as worth exploring, although it has not been officially discussed. The report says that it would be fairly easy to build a railway down the Ruhuhu valley. If this 47 miles could be built and connected to the mines by ropeways (direct haulage by locomotive to the pits might be impossible), the coalfield would have access to the lake. A modest start could be made with the construction of a port near the mouth of the Ruhuhu and additions made to the lake fleet. Enquiries have shown that Nyasaland is capable of industrial development given a good coal supply at economical rates and this market would give the coalfields a start. As an alternative to the railway, ropeways direct from the mines to the port might be practicable. In any case, close co-operation would be necessary between the two governments concerned, the Nyasaland and East African railways and the Colonial Development Corporation, but unless some action is taken on transport in the northern part of the Nyasa basin, the Corporation might as well abandon both the afforestation and the mining schemes.

The report suggests the lowering of road freights by government assistance. This is hardly going to be practical administratively without the introduction of a licensing system akin to the British. Tanganyika is alone among South and East African countries in refusing to introduce such a system, although, in fact, an ordinance providing for it has been on the statute book since 1937. In the absence of that degree of stability which licensing gives, the tendency is for operators to concentrate on the best paying routes at the most profitable times of the year, and to decline the acceptance of responsibility in regard to development areas.

# New Design of Horizontal Driller

*Fitted with a quick-reading dial giving speeds and feeds for various metals*

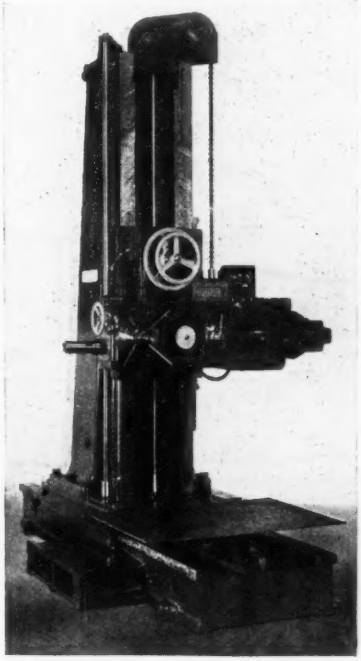
A TWO-INCH diameter spindle horizontal drilling boring and tapping machine has recently been introduced by Kitchen & Wade Limited, a feature of which is the provision of a quick reading dial on the front of the saddle giving speeds and feeds to be used in machining various metals within the capacity of the machine.

### Design Particulars

The splined spindle has a minimum diameter of 2 in, and is bored at the nose end No. 5 Morse taper, and is supported through its 24 in. traverse by a large diameter steel sleeve on which the feed rack is cut. Both fine and rapid hand adjustment is provided, operated by a small handwheel and cross handles respectively. Once the desired position has been reached, a slight forward movement of one of the handles engages the power feed. The cross handles also permit of a sensitive lever feed when drilling small holes.

A 5 h.p. motor is built into the saddle, and twelve changes of spindle speed, in one of the four series from 1,500 to 45 r.p.m. down to 600 to 18 r.p.m. are available. All speed changes are obtained by a single lever, the speeds selected are directly indicated. The driving gears are of hardened nickel chrome steel, carried on ball bearing mounted, high tensile, multi-splined shafts.

A master electric control, conveniently positioned, provides forward, stop, inching and reverse movements. The machine will drill 3 in. diameter from the solid in mild steel and 3½ in. in cast iron. A built-in oil pump supplies lubricant to the saddle mechanism, and a visual indicator is mounted in the front of the saddle.



*Kitchen & Wade horizontal drilling, boring and tapping machine*

The column has 5 ft. of traverse on the four enclosed ball bearing rollers on the bed slideways, and the saddle is balanced by a dead weight housed inside the column. The locking and traverse motions for both column and saddle are operated from the saddle which has 4 ft. of movement vertically. The machine can be supplied with one of a wide range of work tables.

REVISED DATA SHEETS FOR CRANES.—A booklet of revisions to the specification published in May, 1950, for heavy duty overhead travelling electric cranes for use in iron and steel works has been published by the Iron & Steel Research Association. Copies are available free from the Information Section of the Association at 11, Park Lane, London, W.1.

THE TOLL OF TAXATION.—In his statement circulated with the report and accounts of Pinchin, Johnson & Associates Limited, the Chairman, Mr. G. R. T. Taylor, said that the heavy burden of taxation on undertakings domiciled in the United Kingdom was well illustrated by a study of the parent company's results for the past three years. For 1949-50, the net profit amounted to £933,167, the appropriation for taxation in that year being 53 per cent. of the net profit. The corresponding figures for 1950-51 were net profit £1,087,843, and taxation £610,000 (56 per cent.). Further development at home and overseas during the past year was responsible for profits increasing by £119,088 over 1950-51 to the record level of £1,206,931. Additional taxation on the past year's profits had appropriated more than the whole of the profit increase, the total tax liability being estimated at £790,000, or 65 per cent. of the parent company's net profit for the year. Thus, over the three-year period, net profits of the parent company had increased by £273,764 and taxation by £300,000, leaving less available for distribution to shareholders and for reserves in 1951-52 than was available in 1949-50.

# British Railways Locomotive Tests—3*

## *Class "B1" and Class "4" locomotives*

*By E. C. Poultney, O.B.E., M.I.Loco.E.*

THE class "B1" mixed-traffic 4-6-0 engine employed for the tests on the plant at Rugby and on the road was designed at Doncaster, and before the trials were carried out was prepared for testing at the Darlington Shops, where the axleboxes were reconditioned, tyres turned and piston and valve rings renewed.

For the tests on the Rugby plant and subsequently on the road, the balancing of the reciprocating masses was increased from 30 per cent, the normal for the class, to 70 per cent. The engine had run a total mileage of 46,000 miles since new and a further 7,000 before starting the tests, the subject of the bulletin covering the tests under notice. A total of 3,150 miles was covered on the stationary plant, and on the road an additional 1,950 miles.

Tests were made using two different qualities of coal, Blidworth and South Kirkby. When using the Blidworth coal, no tests were made at rates of evaporation beyond the feeding capacity of the exhaust steam injector. Maximum evaporative capacity was not, therefore, determined. It is considered, however, that this would be well beyond the rate of 20,000 lb. per hr. actually attained. The Blidworth coal was very similar in calorific value to that used for the "Hall" class engine. The following are particulars of the South Kirkby coal:—

| | |
|---|---|
| Calorific value, B.Th.U. per lb. "as received" ... ... ... ... | 13,800 |
| B.Th.U. per lb. dry ... ... ... ... | 14,420 |
| "From and At" evaporative value, water lb. per lb. of coal as received" ... | 14·23 |
| Moisture, per cent ... ... ... | 4·26 |

The superheater produced admission steam carrying temperatures of from 520 to about 630° F. at evaporations of from 7,000 to 20,000 lb. per hr., representing a superheat of from about 120 to about 235° F. The above is for Blidworth coal. When using South Kirkby coal, the steam temperatures were very similar, but a maximum evaporation of 25,000 lb. per hr. was reached when the steam to the cylinders carried a temperature of 660° F. and about 270° F. superheat.

The d.b.h.p. characteristics for this engine are well shown by graph 10, which is for Blidworth Coal. To illustrate the test performance of this engine, the composite graph 11 gives the coal rates per d.b.h.p. hr. in passenger service on the level and on rising grades of 1 in 100 and 1 in 200. The shaded portions indicate the train loads hauled at 50 miles per hour for a minimum expenditure of coal, which is South Kirkby; graph 12, provides similar information for Blidworth coal.

To supplement the description given of the controlled road testing system, a diagram is reproduced showing the performance of the engine running between Appleby and Dent on the Settle and Carlisle road of the former L.M.S.R. This test was made at a nominal constant rate of evaporation of 18,000 lb. per hr., representing a high steaming rate.

The records of the summations of increments will be interesting as showing the controlled method of firing. The variations in the rate of cut-off made by the engine driver with alterations in speed which holds the steaming rate constant will also be noted. The actual mean steaming rate was 18,020 lb. per hr. It will be noted that under each coal figure the water taken from the tank is shown, while the space between firing each increment of coal, each of 111 lb. weight, indicates the time between each round of firing.

The boiler of the "B1" class engine is stated to have proved to be very free

* Parts 1 and 2 appeared in our issues of October 10 and 17

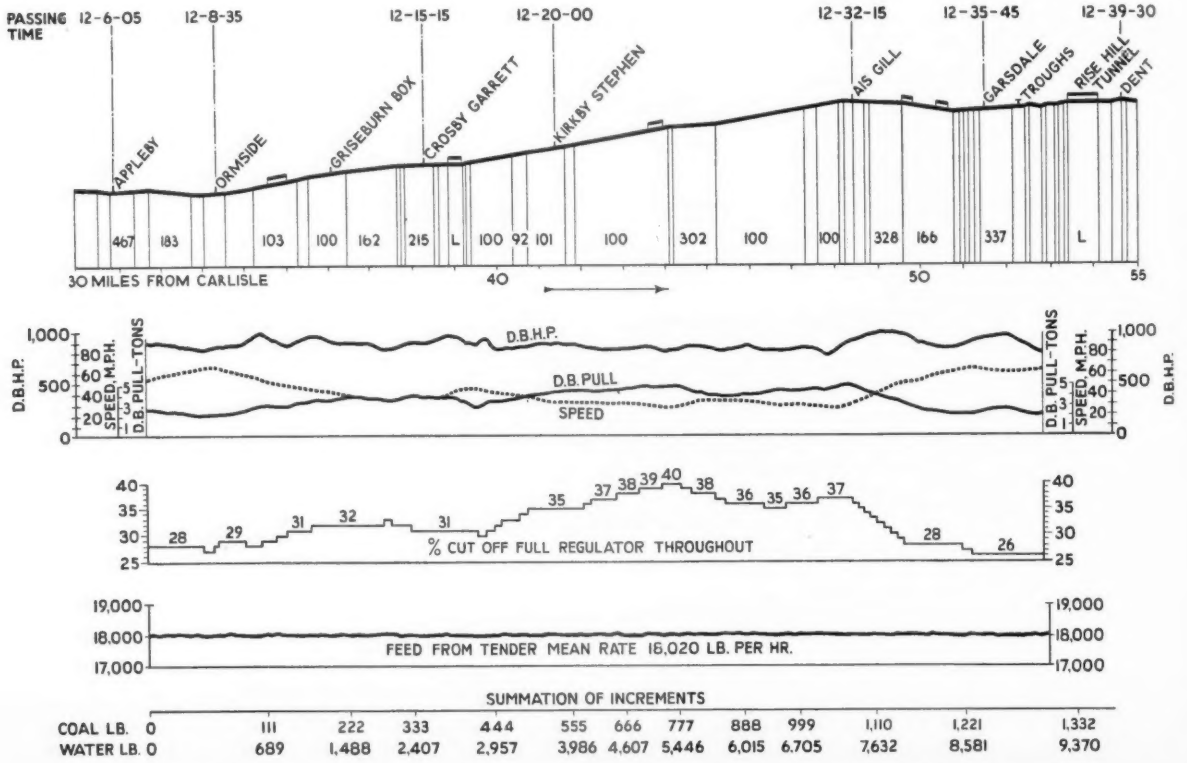



*Diagram of test run of "B1" class locomotive at a high steaming rate, South Kirkby coal, exhaust steam injector*

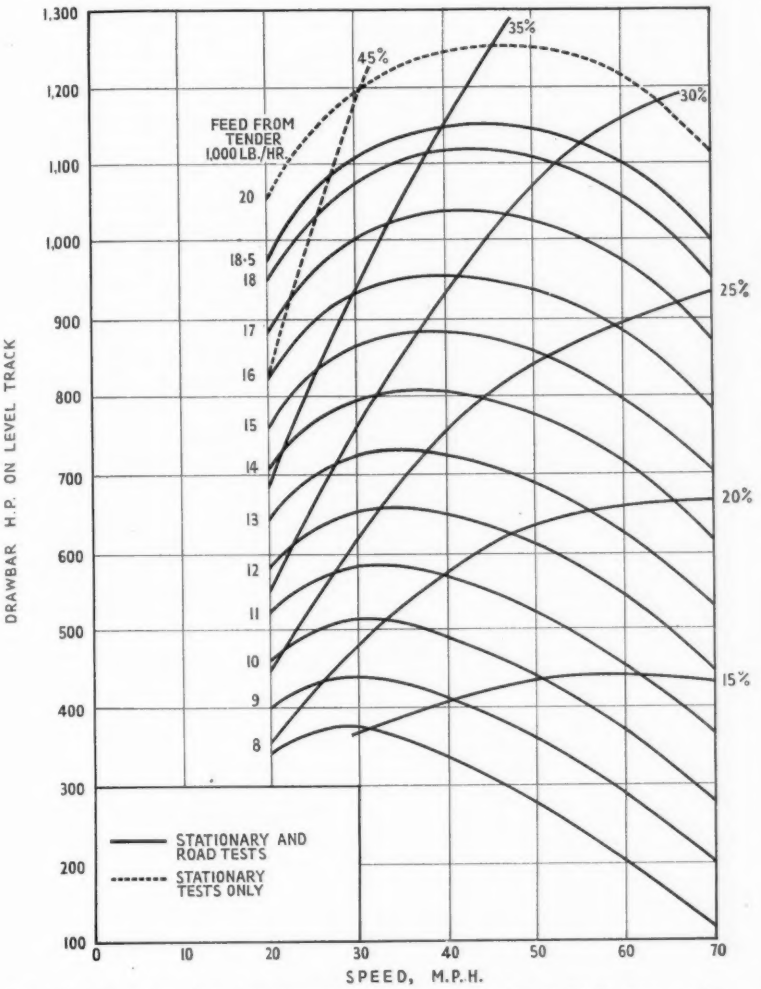



*Fig. 10—Showing drawbar horsepower characteristics, "B1" class engine, at varying speeds and cut-offs, South Kirkby coal*

steaming, though rather sensitive to any departure from the correct method or rate of firing and slow to recover from the effects of any such occurrence. During the tests, the fire was kept relatively thin for each condition of working and the firedoor was kept in the closed position when not actually firing. A damper is at the front of the ashpan only; it was partially open only for lower power tests and fully open when on the plant during high power tests. This boiler has 141 tubes 2 in. outside dia., having a length between the tube plates of 13 ft. 11⅞ in.

Allowing a tube wall thickness of 11 s.w.g., the length to bore ratio is 95 to 1. The tubes are, therefore, short in relation to the inside dia., thus showing that the resistance through the boiler would be low. For a given draught, the rate of gas flow would be high and likewise the steaming rate. No doubt a smaller tube of 1⅞ in. dia. outside would be an improvement; front end tube exit gas temperatures would be lower, as also would be the mean gas temperatures in the smokebox.

At maximum rates of working, these temperatures are shown to be 830 and 790° F. when South Kirkby coal is fired. This represents some loss of heat when it is remembered that, in general, the specific heat of the mixed front end gases is 0.242 B.Th.U. per lb. weight of gas. For a gas temperature of 790° F. the heat content per lb. is, therefore, 190 B.Th.U. and, assuming an air temperature of, say, 60° F., the heat lost per lb. of gas ejected up the chimney is 190 – 14.5 = 175.5 B.Th.U.

For any given amount of gas leaving the firebox per lb. of coal actually "burned," the total front end loss is directly proportional to the front end gas temperatures. The overall efficiency of the "B1" class boiler when using South Kirkby coal ranged from about 81.5 to 44.9 per cent for firing rates of 35.6 to 191.5 lb. of coal per sq. ft. of grate area per hr. At the latter rate of firing, the actual evaporation was 25,000 lb. per hr., equal to 15.1 lb. per sq. ft. of evaporative heating surface per hr.

When using Blidworth coal, the maximum and minimum boiler efficiencies were 81 and 68 per cent when the respective firing rates were 35.6 and 107.1 lb. of coal per sq. ft. of grate area per hr. The corresponding actual hourly evaporations were 8,000 and 19,500 lb. of water.

### Tests with Class "4" Locomotive

The locomotive selected for the tests of the L.M.R. class "4" mixed-traffic engines was one of those built in December, 1950, and had run about 6,000 miles. As originally built, engines of this class had double chimneys and blastpipes; however, the later locomotives have the normal single chimney and blastpipe arrangement, and one of these was used for the tests. A self-cleaning front end is fitted, as is also a shaking grate. It is intended that an engine of this class should form the basis of one of the standard types. A notable feature of the performance of this locomotive was the high steam temperatures recorded when compared with the "B1" and "Hall" class engines.

At evaporation rates of 8,000 and 18,000 water lb. per hr., steam temperatures ranged from 630 to 680° F., representing 200 and 280° F. superheat. Comparative data for the other two engines are as under:—

| | | |
|---|---|---|
| "Hall" class: | | |
| Evaporation, water lb. per hr. | 8,000 | 18,000 |
| Steam temp., ° F. | 500 | 575 |
| "B1" class: | | |
| Evaporation, water lb. per hr. | 8,000 | 18,000 |
| Steam temp., ° F. | 540 | 625 |

Blidworth coal fired in each case.

Boiler working steam pressures of 225 lb. per sq. in. standard for all engines. The boiler of the L.M.R. engine is shorter than for the "Hall" and "B1" classes, the length between tube plates being 10 ft. 10½ in. compared with 15ft. 2 7/16 in. and 13 ft. 11⅞ in. The test report on the L.M.R. class "4" locomotive remarks on the temperatures recorded in the exhaust, which are stated to range between 60 and 130° F. These are said to be higher than those shown with other locomotives "relative to the admission steam temperature and cut-off." It is therefore concluded that some leakage of steam past the pistons was taking place to an unusual extent in relation to the recorded mileage.

Referring to the performance of this engine, graphs giving the actual working results in freight service will be considered, for, though the class "4" locomotives are well able to handle medium speed passenger traffic, they are largely used for working freight trains. Graph 13 shows the overall performance characteristics of this class "4" engine when using Blidworth coal, and, as this corresponds to graph 2 "Hall" class and also graph 10 "B1" class, the relative powers of these three engines may be seen. Graphs 14, 15, and 16, give the coal rates when handling freight trains of varying trailing loads on a level road on the basis of the d.b.h.p. developed and per trailing ton mile.

The difference in the amount of coal required is readily seen. Bedwas coal is the most economical, judging by the actual weight required per d.b.h.p. hr.

This coal has a high calorific value per pound weight as fired. The calorific value is 14,050 B.Th.U. compared with 12,500 for Blidworth and 12,660 B.Th.U. for Lilleshall coal. Concerning the latter, the test report states that it proved troublesome with smoke and the production of carbon monoxide, from which the other coals were practically free.

The graphs show the coal consumptions relative to the power produced for each of these kinds of coal. From the point of view of energy consumptions per unit of work done and locomotive thermal efficiencies, the quantities of coal required and the calorific values must be taken into account. Assuming an 800 ton freight train and a speed of 30 m.p.h. on a level tangent track, the following applies to a class "4" locomotive:—

| | |
|---|---|
| *Blidworth coal* ... ... ... ... | 12,560 B.Th.U. |
| Per d.b.h.p. hr. ... ... ... | 2·3 lb. |
| Energy consumption ... ... | 28,880 B.Th.U. |
| Efficiency of locomotive ... ... | 8·8 per cent |
| *Bedwas coal* ... ... ... ... | 14,050 B.Th.U. |
| Per d.b.h.p. hr. ... ... ... | 2·1 lb. |
| Energy consumption ... ... | 29,600 B.Th.U. |
| Efficiency of locomotive ... ... | 8·55 per cent |
| *Lilleshall coal* ... ... ... ... | 12,660 B.Th.U. |
| Per d.b.h.p. ... ... ... ... | 2·55 |
| Energy consumption ... ... | 32,280 B.Th.U. |
| Locomotive efficiency ... ... | 7·76 per cent |

The tests carried out with this class "4" locomotive were made using three different kinds of coal. They were Blidworth common to the tests made with the "Hall" and "B1" classes, and two other kinds, Bedwas and Lilleshall. Particulars of the Blidworth coal have already been given, and for the latter they are as follow:—

| — | Bedwas | Lilleshall |
|---|---|---|
| Calorific value B.Th.U. per lb. "as received" ... | 14,050 | 12,660 |
| Calorific value B.Th.U. per lb. "dry" ... ... | 14,210 | 13,640 |
| "From and at" evaporative value water lb. per lb. of coal "as received" | 14·53 | 13·09 |

The Blidworth coal, while being substantially as used for the other two locomotives, had an "as received" calorific value of 12,560 B.Th.U. per lb. and an evaporation "F. & A." value of 12·99 lb. of water per lb. of coal. The Bedwas coal is a Welsh coal and, in common with this type of fuel, is of a friable nature and, in consequence, is very liable to be dusty.

This has some effect on boiler efficiency, due to losses by coal escaping unburned, more especially at high rates of firing. In view of this, each increment of coal as bagged and weighed included a proportion of fines, 8 per cent by weight. This was, as a rule, less than the proportion of fines in the coal actually fired, as it was subject to further breakdown by the fireman after the increment had been placed at his disposal.

Taking into consideration the qualities of the three different kinds of coal used, the following particulars of the performance of the boiler will be interesting.

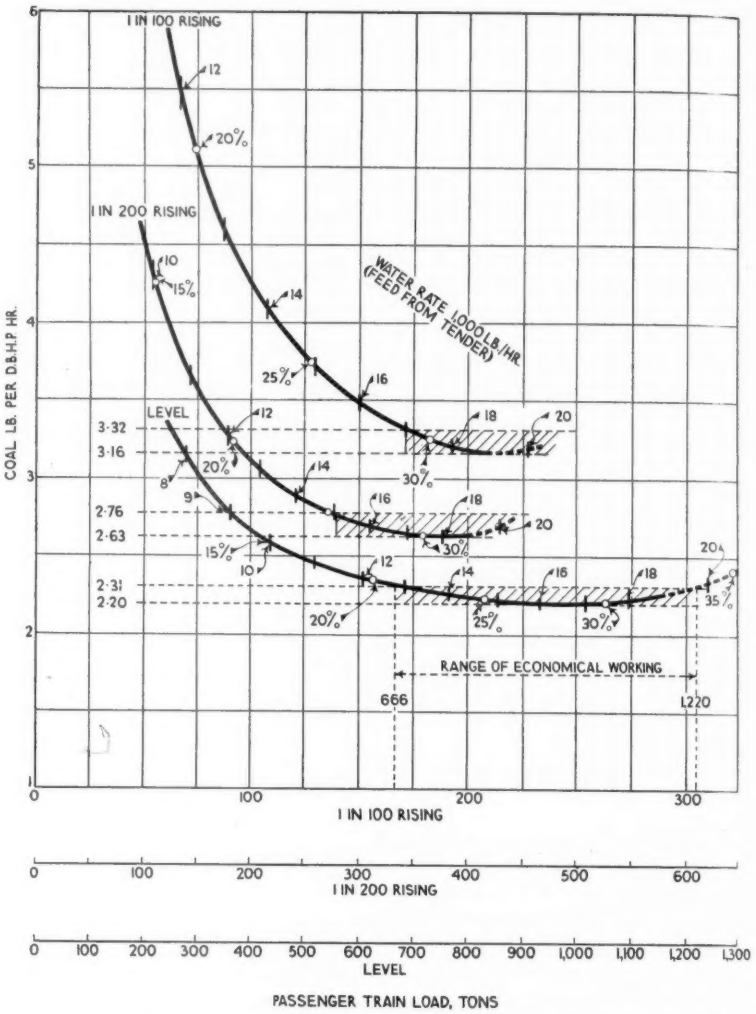



*Fig. 11—Examples of range of economical working of the "B 1" class locomotive at 50 m.p.h., South Kirkby coal*

**Low Firing Rates**

| — | Blidworth | Bedwas | Lilleshall |
|---|---|---|---|
| Coal fired per sq. ft. of grate area per hr.... ... ... | 32·6 | 32·6 | 32·6 |
| Actual evaporation water lb. per hr.... | 6,100 | 7,000 | 6,100 |
| Boiler efficiency, per cent ... ... | 88·5 | 87·0 | 83·1 |

**Maximum Firing Rates**

| | | | |
|---|---|---|---|
| Coal fired per sq. ft. of grate area per hr.... ... ... | 123·0 | 109·0 | 129·0 |
| Actual evaporation water lb. per hr. ... | 17,000 | 17,000 | 17,000 |
| Boiler efficiency per cent ... ... | 63·1 | 63·7 | 60·2 |

The low firing rates correspond in each case to a total rate of firing of 750 lb. of coal per hr. and the maximum rates apply to 2,840, 2,510 and 2,970 lb. of coal per hr. giving water coal ratios of 6·0, 6·75 and 5·72 lb. for Blidworth, Bedwas and Lilleshall coals respectively. The actual evaporation water lb. per hr. of 17,000 lb. is the maximum attained and in each instance marks the "front end" limit.

Beyond the rate of evaporation the air supply was not sufficient to support combustion. In other words, the steam generated and exhausted was not able to draw sufficient air through the fire-bed to permit of more coal being "burned." However, the evaporation rate of 17,000 lb. per hr. represents an evaporation of 13·9 lb. of water per sq. ft. of evaporative heating surface per hr. which may be considered higher than would be generally required.

It will be observed that at minimum firing rates the three different kinds of coal give closely equal results so far as the overall efficiency of the boiler is concerned, this being specially true of the Blidworth and Bedwas coals. The front end gas temperatures recorded are in each case practically equal at just below 600° F., so that absorption efficiencies are no doubt very closely alike,

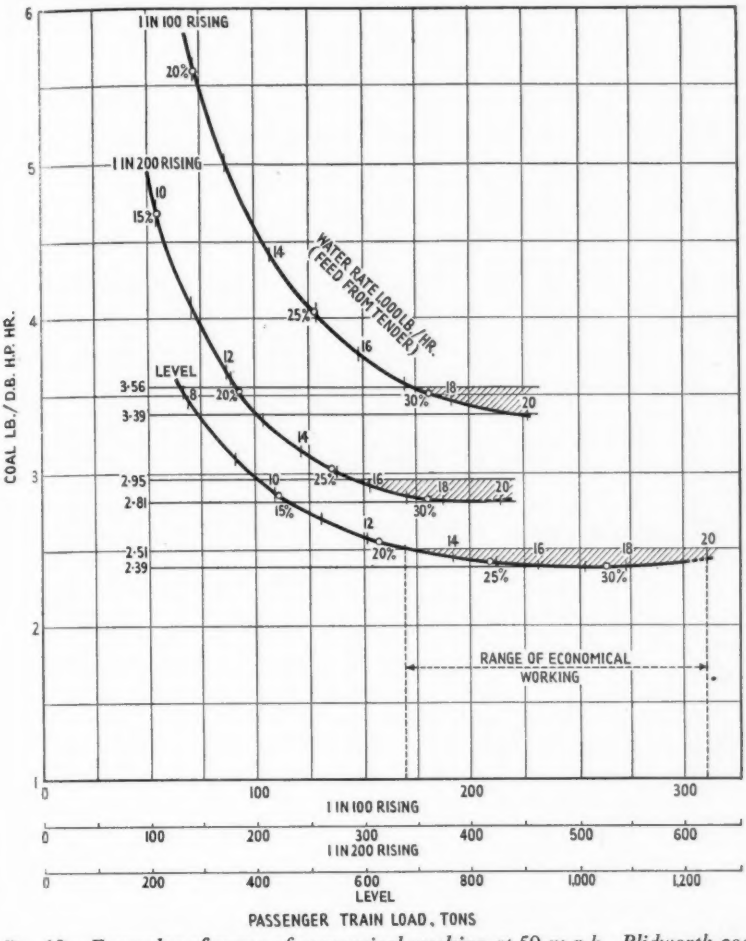



*Fig. 12—Examples of range of economical working at 50 m.p.h., Blidworth coal*

meaning, therefore, that there would be little difference in the relative efficiencies of combustion. At maximum output some difference is shown in the boiler efficiency as between the three different kinds of coal in relation to the rate of firing coal lb. per sq. ft. of grate area per hr.

It will be noted that the efficiencies for the Blidworth and Bedwas coals are shown to be alike, but that the firing rates differ considerably, being 12 per cent. greater in the case of the Blidworth as compared with the Bedwas coal. Here, again, front and gas temperatures are remarkably alike, being 800° F. or very slightly less in each instance.

This would again seem to indicate equal efficiencies of absorption, thus suggesting some loss in combustion efficiency relative to firing rates in the case of the Bedwas coal, caused by the escape of unburned coal, which might be expected with a fuel of a friable nature forming a considerable amount of fines.

### "Hall" and Class "4" Cylinder Performance

The test report Bulletins Nos. 1 and 3 include comprehensive graphs showing the steam consumption per i.h.p. hr. for the "Hall" and class "4" locomotives. The steam rate characteristics are plotted for defined speeds in miles per hour, against indicated horse power, the vertical scale giving the steam consumptions lb. per i.h.p. hr.; further curves are included showing cut-offs per cent and, in addition, a series of more or less vertical lines show the hourly rates of evaporation. For each defined speed in m.p.h. it is, therefore, possible to determine for any given i.h.p. the steam rate per i.h.p. hr., the cut-off at which this is attained and the rate of evaporation water lb. per hr.

For any particular locomotive, the information is, therefore, complete. On the other hand, if for any reason it is desired to make comparisons of the cylinder performance of different locomotives with driving wheels of different diameters, the plots, as presented, are not altogether satisfactory for the reason that, when comparing cylinder performance, speeds in revs. per min. provide a better common denominator than when expressed in m.p.h.

The graphs are, however, extremely good as picturing the cylinder performance of particular locomotives and do show, in general, any striking differences between engines, which in the case of the "Hall" and class "4" locomotives are quickly noticeable. For example, in the case of the "Hall" class, the extreme flatness of the steam consumption curves throughout the speed and power range of this engine is easily seen, more especially for speeds of 30, 40 and 50 m.p.h. and upwards.

At 40 m.p.h., for instance, and at cut-offs from 15 to 30 per cent, corresponding to 850 to 1,400 i.h.p., the steam rate is constant at about 15·2 lb. per i.h.p. hr. Further, at 50, 60 and 70 m.p.h. steam consumption is about 14·8 lb. per i.h.p. hr. As the speeds become lower, steam rates rise and the speed curves are not quite so flat. Taking, for example, a speed of 30 m.p.h. the steam rate at 15 per cent cut-off and 600 i.h.p. is 16·4 lb., gradually rising to 17 lb. at 40 per cent cut-off and 1,350 i.h.p.

Turning now to the class "4" locomotives, the steam rates are lower than for the "Hall" class, which is to be expected on account of the higher superheat carried by the cylinder feed at given rates of cut-off and speeds. At high speeds of 50 to 60 m.p.h. steam rates vary from a minimum of 14·4 lb. per i.h.p. hr. at about 15 per cent cut-off

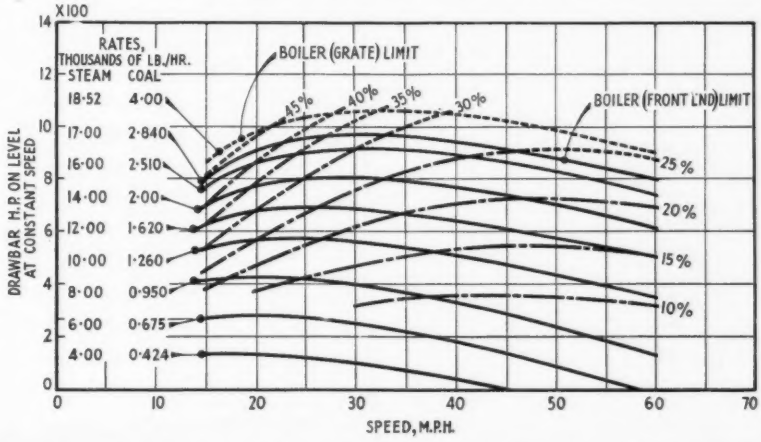



*Fig. 13—Drawbar characteristics of class "4" locomotive, Blidworth coal, live steam injector*

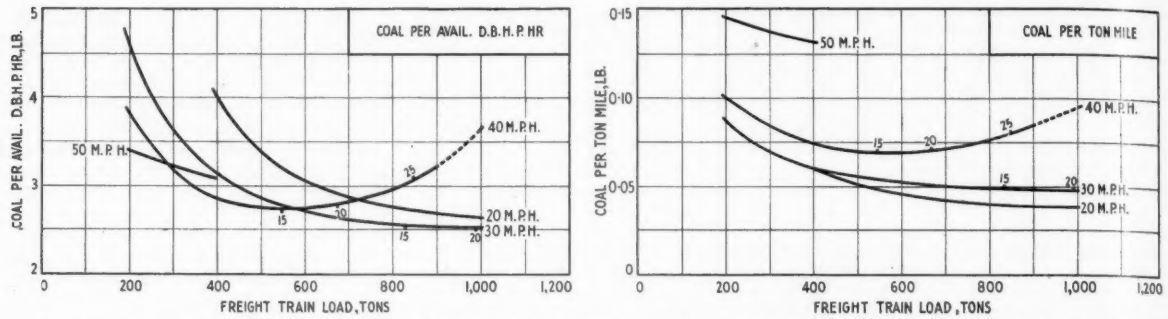



*Fig.* 14—*Examples of cost in coal of different train loads and speeds, freight service level, Lilleshall coal, with live steam injector*

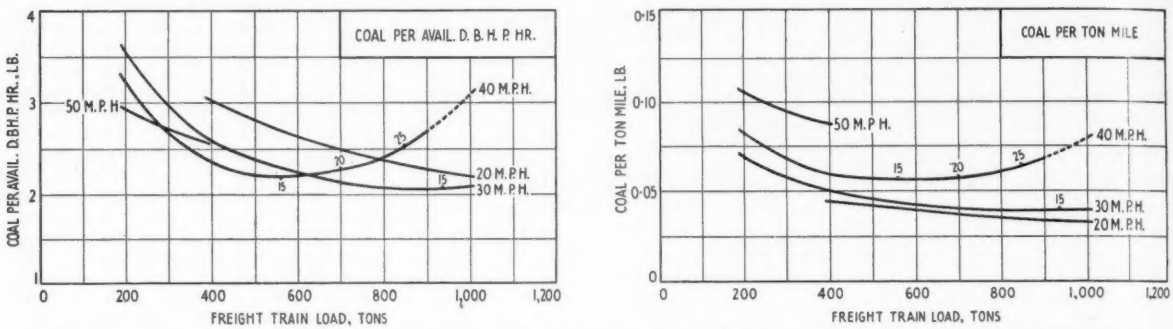



*Fig.* 15—*Examples of cost in coal of different train loads and speeds, freight service level, Bedwas coal, with live steam injector*

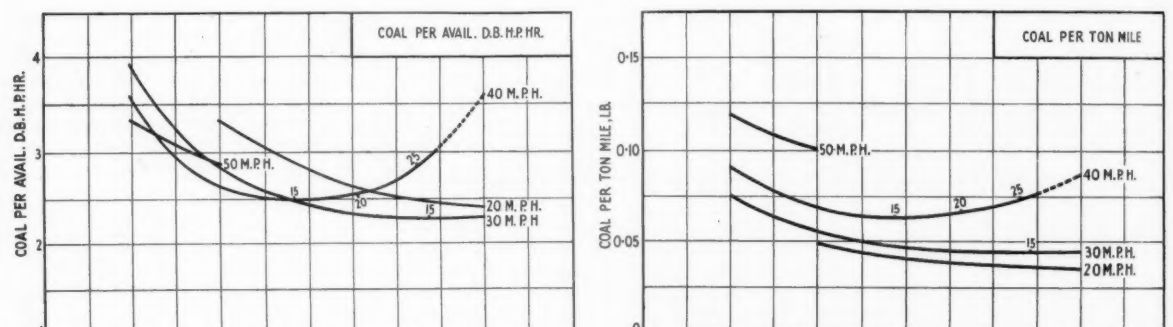



*Fig.* 16—*Examples of cost in coal with different train loads and speeds, freight service level, Blidworth coal, with live steam injector*

to 14·8 lb. at 25 per cent cut-off when the powers developed are 950 and 1,150 i.h.p.

Considering a speed of 30 m.p.h. corresponding to 160 rev. per min., the steam rate per i.h.p. hr. is 15·25 lb. at about 18 per cent cut-off when 725 i.h.p. is developed, rising to 16 lb. at about 32 per cent cut-off and 1,070 i.h.p. These results may be compared with those for the "Hall" at 40 m.p.h. corresponding to 186 revs. per min.

The "Hall" engine between closely equal rates of cut-off and at approximately the same speed in revs. per min., actually about 16 per cent higher, increases its power from 850 to 1,400 i.h.p., an increase of 550 i.h.p., while the class "4" engine increases its power output from 725 to 1,070, a difference of 345 i.h.p.

Comparing these two engines at the speeds in revs. per min. and cut-offs mentioned, on the basis of the thermal efficiencies of the steam action in the cylinders, the efficiency falls from 13·25 per cent at 15 per cent cut-off to 13·1 at 30 per cent for the "Hall" engine, while for the class "4" the thermal efficiency is 12·9 at 18 per cent cut-off and at 32 per cent cut-off, 12 per cent.

The values given for thermal efficiencies are the heat units in B.Th.U., utilised per lb. of steam as supplied to the cylinders per i.h.p. hr. expressed as a percentage of the heat in the steam (enthalpy) in the steam chest steam per lb. above 32° F.

The overall thermal efficiencies shown by the three locomotives under the test conditions were uniformly good. The data presented shows that under all normal operating requirements each engine would have an efficiency of from about 8.3 to 7 per cent. When considering these results the actual conditions ruling during the various trials must be taken into account for the reason that under normal operating circumstances the results would not be quite the same, though on the other hand these engines if reasonably well handled are evidently capable of showing a good economy which they may be expected to maintain over a wide range.

(*Concluded*)

INSTITUTION OF ELECTRICAL ENGINEERS.—At a meeting of the supply section of the Institution of Electrical Engineers, Savoy Place, W.C.2, at 5.30 p.m. on October 29, Mr. C. M. Cock will deliver his Chairman's Address.

# Live Fish Conveyance on the S.N.C.F.

*Insulated wagon containing galvanised metal tanks*

*French National Railways wagon for conveying live fish in tanks*

AN unusual traffic on the French National Railways is the conveyance by rail of live fish for human consumption. A special type of wagon, fitted with tanks, has been designed for the traffic. The overall length is 37 ft. 2 in., including a brakesman's cabin at one end and an attendant's compartment at the other. The tare weight is approximately 17 tons 15 cwt., and a load of 13 tons 15 cwt. can be carried.

The wagon body is insulated, and there is a double layer of corrugation in the roof, sides, and floor; between these layers is a cork mattress, and between the cork and the corrugation is a layer of Ruberoid covered by cardboard. Ventilation is by three Torpille suction fans, and on each side of the wagon are three double-pane windows which open inwards; the windows are protected on the outside by expanded metal grills. Access to the wagon is by a strong double-door, centrally placed, which can be closed either from the exterior or interior of the wagon.

Inside the main section of the body are four galvanised metal tanks to hold the fish. The length of each tank is 8 ft. 4½ in., the width 3 ft. 1 in. and the height 3 ft. 8 in.; the tanks each have a capacity of 576 gal. Each tank is provided with an outlet valve, which can be regulated to work at varying rates; a thermometer; and an instrument to measure the level of the water. At the end of each tank is a rack for eight oxygen bottles; oxygen used for aerating the water is stored at a maximum pressure of 1,420 lb. per sq. in.

The attendant's compartment, measuring 4 ft. by 8 ft. 2 in. has an upholstered tip-up bench, a heating radiator, and a small cupboard.

Suspension of the wagon is by four laminated springs which show a deflection of 0·61 in. per ton. Each spring has nine leaves, each 4·72 in. wide and 0·59 in. thick. The wagon is provided with a screw brake and a compressed air brake, the screw brake is controlled from the brakesman's cabin, which can be reached from either side of the track. The compressed air brake is of the Westinghouse automatic and graduable type, with a 10 in. cylinder and a Luv 1 triple valve. The wagon also includes a through pipe for a vacuum brake, and a heating pipe.

*Interior of wagon, showing tanks in foreground and oxygen bottles behind*

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LONDON AIR TERMINAL.—The British European Airways Waterloo air terminal at the Station Gate Building on the South Bank Exhibition site, to be opened next Spring, will be able to handle 14,000 passengers a day, about double the capacity of the Kensington air station, which will then be closed. Plans have been submitted to the Ministry of Civil Aviation for a helicopter station on the South Bank site, but no decision has yet been made. B.E.A. has already reported that it is suitable from a technical point of view. The plans for the new passenger terminal will not be affected by the decision on the use of the site for a helicopter station, which will involve relatively few structural alterations. B.E.A. has taken the Station Gate Building on a seven-year lease. The building has its own connection with the Underground and the Southern Region. Meanwhile, the proposed extension of Gatwick Airport, which is connected directly with the London-Brighton main line, as an alternative to London Airport and Northolt, involves coordination of this project with that of the new town of Crawley.

ENGINEERS' GUILD.—A special meeting of the West Midland Branch of the Engineers' Guild at the Digbeth Institute on October 14, under the Chairmanship of Mr. F. R. G. Webb, was addressed by Mr. Robert Chalmers, first President of the Guild, and by Mr. Henry Nimmo, Chairman of the Southern Electricity Board, who recently succeeded to the Presidency. Mr. Chalmers reviewed the ideas which led to the formation of the Guild in 1938, and their activities which, he claimed, had already much enhanced the prestige of the engineering profession. Among the Guild's achievements had been the defeat of attempts to compel professional engineers to belong to trade unions or professional associations. He looked forward to the Guild becoming the mouthpiece of all the professional engineers in the land, and appealed for still greater support from the profession. Mr. Nimmo said that the Guild's role was much more than a protective one; it sought to stimulate professional engineers everywhere to widen their interests and adapt their highly trained minds and professional integrity to leadership.

# Rapid Pile-Driving on the Illinois Central

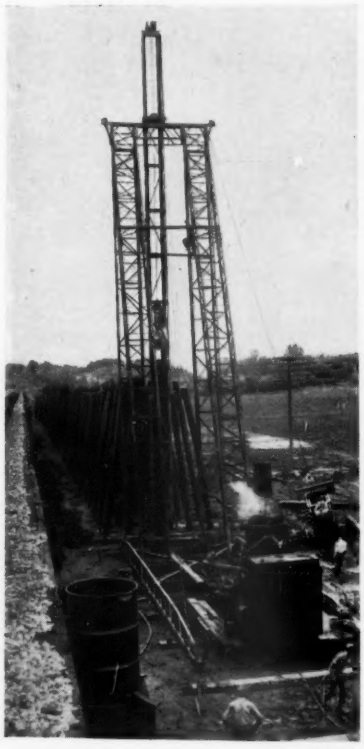
*A single driver drives 30 60-ft. piles with 35-ft. penetration daily in a 3,400-ft. viaduct*

THE Illinois Central Railroad recently replaced a long ballasted-deck pile trestle viaduct across a spill channel of the Ohio River, near Wickliffe, Kentucky, on the Chicago-New Orleans main line. Nearly three-quarters of a mile long, the new structure is also of the ballasted-deck type, but at 475-ft. intervals along its length are fire-breaks, consisting of 20-ft. concrete slab spans supported by concrete piers; there is also a 47-ft. R.S.B. span on similar piers at a point in the viaduct where Willow Creek is crossed. The new viaduct is approximately parallel to the old one and at an average distance of 25 ft. from it.

The main part of the new structure consists of 248 13-ft. spans about 30 ft. high, and the six piles in each pile-bent and all other timber are creosoted. With the exception of 24 bents at the ends of the viaduct, which were driven by a rail-mounted pile-driver, all the piles, nearly 700 in number, were driven by a single pile-driver. It consists of a truss-sided steel frame, the trusses running as skids on transverse timbers; at one end of the frame is a double A-frame steel gantry tower, 60 ft. high, and at the other an oil-fired boiler. The pile-driver leads are suspended from a pivot on a carriage running on a track along the gantry transversely to the viaduct, so that all piles in a bent can be driven without moving the pile-driver, the pivot also allowing for driving the batter piles.

When a bent is complete, the pile-driver hauls itself backwards by means of a winch and cable anchored to a dead-man, until the leads are in position for driving the next bent. This method was possible because the ground along the alignment of the viaduct was level. The piles vary in length from 60 ft. to 65 ft. and were driven to an average penetration of 35 ft. Such progress was made that on an average 30 piles were driven daily, and on some days as many as 45 were driven.

The work is being carried out by departmental labour under the general direction of Mr. C. H. Mottier, Vice-President and Chief Engineer of the Illinois Central Railroad.



*Pile driver at work. Note frame with truss skids and gantry with leads in mid-position*

DEAN & DAWSON LIMITED IPSWICH BRANCH—On November 3 a branch of Dean & Dawson Limited will be opened to the public at 6, Dog's Head Street, Ipswich. The telephone number is Ipswich 55787, and there will not, at present, be any telegraphic address. Mr. J. R. Guy will be Manager of the new branch.

OSRAM LAMPS FITTED WITH FUSES.—The General Electric Co. Ltd. announces that all Osram general lighting service lamps from 40W. to 300W. single-coil, and from 40W. to 100W. coiled-coil, are now fitted with fuses, consisting of lengths of fuse-wire sealed in glass tubes and incorporated in the two lead-in wires that carry the current to the filament. The purpose of the fuses is to minimise the risk of circuit fuses blowing, with the consequent inconvenience caused by other lamps on the same circuit being extinguished.

*Completed piers for one of the six 20 ft. concrete slab fire-breaks, and old viaduct on the right*

# RAILWAY NEWS SECTION

## PERSONAL

At a meeting of the Managers' Conference held at the Irish Railway Clearing House, Dublin, on October 14, Mr. G. B. Howden, General Manager, Great Northern Railway (Ireland) and Coras Iompair Eireann, was unanimously elected Chairman of the Conference for the year 1953.

Mr. Alex Lyle, Assistant to the Vice-President, Canadian Pacific Railway, who, as recorded in our October 3 issue, has been appointed Assistant Vice-President, was born in Scotland, went to Canada in 1910 and joined the C.P.R. in Moose Jaw as a stenographer. He was moved to Revelstoke, British Columbia, shortly afterwards and in 1912 he was in Vancouver as secretary to the General Superintendent. In 1927 he was appointed chief clerk to the Assistant General Manager, Western Lines, at Vancouver, and in 1930 became chief clerk to Mr. D. C. Coleman, Vice-President of Western Lines. When Mr. Coleman became Vice-President of the company, Mr. Lyle went with him to Montreal, continuing as his chief clerk, and took over as Assistant to the Vice-President in 1942. During the first world war he served in France in the Canadian Railway battalion.

*Mr. Alex Lyle*

Appointed Assistant Vice-President, Canadian Pacific Railway

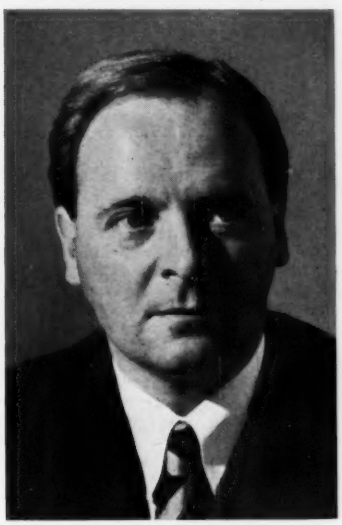
We regret to record the death on October 20, at the age of 77, of Sir Harold Clapp, a former Chairman of the Victorian Railways Commissioners.

The Minister of Transport, Mr. A. T. Lennox-Boyd, has appointed Lord Rochdale to be a Member of the Central Transport Consultative Committee for Great Britain, in succession to Mr. A. E. Lines, who has retired.

Mr. P. H. Muirhead and Major-General C. A. L. Dunphie, Directors of Vickers-Armstrongs Limited, have joined the board of the parent company, Vickers Limited.

Mr. C. B. Clapham, B.Sc.(Eng.), A.M.I.Mech.E., Assistant Secretary, Road Passenger Executive, has been transferred to London Transport as an Officer of the Executive, with the title of Assistant to the Works Manager (Buses & Coaches) in the department of the Chief Mechanical Engineer (Road Services).

Dr. Maurice Hegarty who, as recorded in our October 17 issue, has been appointed Chief Medical Officer, Coras Iompair Eireann, joined the Dublin United Tramway Company in August, 1943, and assisted the late Dr. O'Reilly in the launching of that company's staff medical and welfare scheme. Dr. Hegarty was born in Dublin in 1914, educated at Stoneyhurst College, Lancashire, and later studied at the College of Surgeons, Dublin, qualifying in 1939. Having acted for some time as surgical assistant in London, he returned to Dublin and was house surgeon to several hospitals in that city. On the occasion of the staff pilgrimage to Knock last year, he was one of the medical officers who supervised the conveyance of invalids to the shrine. Dr. Hegarty is associated with the Tuberculosis Rehabilitation Centre at Pleasants Street and has for many years been Medical Officer of the Glenageary Section of the St. John Ambulance Brigade. He is also a Governor of the Royal Hospital for Incurables and is a Member of the Council of the Association of Industrial Medical Officers of Ireland.



*Dr. Maurice Hegarty*

Appointed Chief Medical Officer, Coras Iompair Eireann

Henry Meadows Limited, Wolverhampton, announces the appointment of Mr. J. E. Robinson as Chief Engineer, in succession to Mr. R. S. Crump, M.I.Mech.E., who is retiring from the position; Mr. Crump remains a Director of the company and will act as technical consultant. Mr. G. Wedge has been appointed Technical Adviser, Mr. E. B. Christie Contracts Manager, and Mr. A. F. Brown Sales Promotion Manager.

Mr. W. H. Pilkington, Chairman of Pilkington Bros. Limited, has been elected Deputy President of the Federation of British Industries Limited. Mr. Pilkington is Chairman of the F.B.I. Fuel & Power Consumers' Policy Committee.

The Shell Petroleum Co. Ltd. announces that Mr. J. A. G. Croxon sailed for Australia on October 11. He is expected to spend eighteen months in Australia on a special assignment with headquarters at Melbourne.

Mr. D. R. White, Divisional Signal & Telecommunications Engineer, Derby, London Midland Region, who, as recorded in our October 10 issue, has retired, began his railway career in 1907 in the Telegraph Department of the Midland Railway at Derby. Later he was engaged on the electrification of the Lancaster, Morecambe, and Heysham lines, and in 1914 was supervising the maintenance work on the London, Tilbury & Southend section of the Midland Railway. He was appointed Inspector in 1919, and became District Electrical Assistant at Watford in 1926, where he was responsible for the whole of the London Area of the L.M.S.R. He took up the appointment of Divisional Signal & Telecommunications Engineer, Derby, in 1944.

*Mr. D. R. White*

Divisional Signal & Telecommunications Engineer Derby, L.M. Region, who has retired

The British Thomson-Houston Co. Ltd. states that Mr. K. M. Fox, A.M.I.E.E., has been appointed Manager of the Swansea District Office, in succession to Mr. S. J. Clarke, who is taking up another appointment in the B.T.H. organisation.

The General Electric Co. Ltd. announces the appointment of Mr. W. G. Thompson, Ph.D., formerly Assistant Manager of the rectifier works at Witton, as Manager of the company's Witton laboratories.

Mr. Lawrence W. Robson has been appointed Deputy Chairman of Associated British Engineering Limited.

XUM

*Mr. M. A. Oldham*

Appointed Assistant to Commercial Superintendent (Freight), North Eastern Region

*Mr. A. S. Leybourne*

Assistant Chief of Police, South Western Area, British Transport Police, who is retiring

*The late Mr. J. J. Hughes*

Chairman, Traders' Co-ordinating Committee on Transport 1931-50

Mr. M. A. Oldham, Assistant District Goods Superintendent, Newcastle-on-Tyne, North Eastern Region, who, as recorded in our October 10 issue, has been appointed Assistant to Commercial Superintendent (Freight), York, was educated at Stockport Grammar School and Jesus College, Cambridge, and joined the L.N.E.R. in 1923 as a traffic apprentice. After a five-year training period, he was appointed Head of the Rates Section in the District Goods Manager's Office at Newcastle, became Assistant Chief Rates Clerk in the Goods Manager's Office at York in 1929, and three years later was made Chief Rates Clerk in the same office. Between 1935-37 he was seconded to the Palestine Government as Commercial Manager, Palestine Railways, and afterwards was attached to the District Superintendent's Office, Hull, on fire prevention duties. From 1941 to 1943 he was seconded to the Ministry of War Transport as Regional Fire Prevention Officer, Yorkshire, East and West Ridings, and for a further year was seconded to the War Office as Financial Adviser, A.F.L.O.C. Command, Belgian Congo. In 1944 Mr. Oldham was Acting District Goods & Dock Manager, West Hartlepool, and he was appointed Assistant District Goods Manager (later Superintendent), Newcastle-on-Tyne, in 1945.

Mr. M. R. Haddock, Assistant Secretary, Docks & Inland Waterways Executive, has now taken up his duties as Assistant General Manager & Assistant Secretary, National Dock Labour Board.

Mr. Henry F. Spencer has been appointed a managing director of Richard Thomas & Baldwins Limited.

SCOTTISH REGION APPOINTMENTS

The following appointments are announced by British Railways, Scottish Region:—

Mr. T. Crosbie, Chief Booking Clerk, Glasgow St. Enoch, to be Stationmaster, Glasgow St. Enoch, in succession to Mr. Ian McCleary, who has retired.

Mr. G. Bell, Stationmaster, Dundee Tay Bridge & West Stations, to be Stationmaster, Aberdeen.

Mr. A. S. Leybourne, Assistant Chief of Police, South Western Area, British Transport Police, who, as recorded in our October 10 issue, is retiring on October 25, joined the Great Western Police Department in May, 1913, and performed duties as a Detective Officer at Cardiff, Newport, Pontypool Road and Shrewsbury until the 1914-18 war, when he served in France, Belgium and Germany in the Military Police, and was awarded the Military Medal. On his return from the Forces he was Inspector in charge of various Districts until 1940, when he was promoted Superintendent in charge of the South Wales Division. In 1946, Mr. Leybourne was transferred to Paddington as Assistant to the Chief of Police, and he was appointed Assistant Chief of Police in 1949.

Mr. K. M. Fox, until recently in charge of the British Thomson-Houston Co. Ltd. District Sub-Office, Bristol, has been appointed Manager of the company's Swansea District Office, in succession to Mr. S. J. Clarke, who will shortly be taking up another appointment in the B.T.H. organisation.

Monsieur Albert Röllin, Deputy Staff Officer, General Direction, Swiss Federal Railways, has been appointed Staff Officer in succession to Monsieur Hans Itten, who retires at the end of this year on attaining the age limit. Monsieur Röllin, who is 64, joined the Gotthard Railway Company in 1905; he has been attached to the S.F.R. Staff Department since 1934, and was appointed Deputy Staff Officer in 1936.

Mr. R. H. Murdoch, Divisional Transport Officer of the Scottish Division of the National Coal Board, has been appointed Assistant Area Marketing Manager for the Fife Areas. He has been succeeded by his Deputy, Mr. H. Adamson.

Mr. H. C. Healey has been appointed Regional Ambulance Secretary, London Midland Region. The transfer is announced by the London Midland Region of the Regional Ambulance Secretary's office from Manchester to Regional Headquarters at London, Euston.

Mr. J. J. Hughes, M.Inst.T., whose death we recorded briefly in our October 17 issue, was Chairman of the Traders' Co-ordinating Committee on Transport, 1931-50, and a Founder Member of that Committee. He was a member of the 1923 Committee of Inquiry as to whether the railways should have power to carry goods by road, and was for five years a member of the Transport Advisory Council. He also served for a time as a member of the National Wages Board under the Railways Act, 1921. Mr. Hughes gave evidence on several occasions before the Railway Rates Tribunal, and served for a period as a co-opted member of the Tribunal. He was for 30 years adviser on transport to the National Association of Biscuit Manufacturers also to the Association of British Chambers of Commerce, and he was Chairman of the Transport Committee of the London Chamber of Commerce. Mr. Hughes also served for 10 years as Chairman of the Transport and Shipping Committees of the Federation of British Industries, and for a long period as Vice-Chairman of the Traders' Dock & Harbour Co-ordinating Committee of the Chamber of Shipping.

The Skefko Ball Bearing Co. Ltd. has announced the appointment of Mr. S. Frisell as Vice-Chairman of the board, and Mr. J. Larsson as a Director of the company. Mr. J. L. Dickinson has been appointed an Alternate Director.

Following the decision of the board of the Western Welsh Omnibus Co. Ltd., to make the office of Secretary a local one, Mr. A. W. Groocock, has relinquished the secretaryship of the company, which he has held since 1946 in conjunction with other appointments at B.E.T. Headquarters. Mr. George Alexander, Accountant of the company, has been appointed to succeed Mr. Groocock as Secretary and is to carry out the duties of both Secretary and Accountant.

The Metropolitan-Vickers Electrical Co. Ltd., announces that Mr. R. Allen is appointed Manager, Birmingham District Office, as from October 1, 1952, in succession to Mr. A. F. Bock, who has retired.

# Harrow & Wealdstone Accident Inquiry

*Evidence and preliminary statement of general conclusion*

Lt.-Colonel G. R. S. Wilson, Chief Inspecting Officer of Railways, Ministry of Transport, on October 15 opened an inquiry in public at Euston into the collision at Harrow & Wealdstone Station, London Midland Region, on October 8. The collision, reported in our October 10 issue, occurred when the 8.15 p.m. express from Perth to Euston ran into the rear of the 7.31 a.m. local train from Tring to Euston as the latter was standing at the up fast line platform at Harrow & Wealdstone. The 8 a.m. Euston to Manchester and Liverpool express was approaching the station at the time on the down fast line and collided with the wreckage of the first two trains.

In opening the inquiry, Lt.-Colonel Wilson said he had been asked by the Minister of Transport, Mr. A. Lennox-Boyd, who had visited the scene of the accident on the afternoon of October 8, to express his sympathy on behalf of the Government to the relatives and friends of the many who had lost their lives and to the injured. He had also been asked to pay tribute to all concerned in the rescue work. Colonel Wilson added that he had spent most of the previous day examining the signal box, signalling, and the local layout generally, and had come to the conclusion that all the evidence should be held in public.

Mr. John Elliot, Chairman, Railway Executive, then expressed on behalf of the British Transport Commission, the Railway Executive, and the whole of British Railways their great concern that this grievous accident should have happened; and asked to be associated with the inspecting officer in extending their deepest sympathy to all who had been bereaved or injured.

Mr. J. W. Watkins, Chief Regional Officer, London Midland Region, expressed thanks to all who had rendered assistance and referred to the many messages of sympathy he had received, including a telegram from the railwaymen of Jugoslavia.

Similar expressions of sympathy and of thanks to rescue workers were made by Mr. J. B. Figgins on behalf of the National Union of Railwaymen, Mr. N. Black on behalf of the Transport Salaried Staffs' Association, and Mr. Baty on behalf of the Associated Society of Locomotive Engineers & Firemen.

Mr. S. G. Hearn, Operating Superintendent, London Midland Region, said the accident involved three passenger trains and blocked all running lines. Of the 111 lives lost [the final figure is 112], 108 were of passengers and three of members of engine crews. The casualties included some passengers who were waiting on the platform to get into the local train and others who were getting out of it. A total of 167 persons was taken to hospitals in the neighbourhood. Eight died after admission and 69 were discharged the same day. Thirty-seven of those killed and 98 of the injured were employed by the London Midland Region; 29 were still in hospital.

The present position was that 74 people were detained in hospital. Seven were seriously ill and the remainder were progressing favourably.

Describing the collisions, Mr. Hearn told how the local passenger train from Tring to Euston was standing at the up fast line platform and was run into from behind by the express from Perth, which was travelling at considerable speed. The down fast line was obstructed, and almost simultaneously, before any effective protective measures were practicable, the express from Euston to Liverpool, which was approaching at speed, collided with the obstruction and gravely worsened the effects of the initial accident. The weather was fine, with some patchy mist.

The train from Tring, of nine vehicles, weighed 251 tons and was estimated to be carrying about 800 passengers. The train from Perth consisted of 11 vehicles, of which four were sleeping cars. It weighed 364 tons and had about 90 passengers. The Euston-Liverpool train, of 15 vehicles including four vans, weighed about 444 tons and was hauled by two engines. The passengers totalled 186.

Because of the short interval between the two collisions the result of the first could not be accurately assessed, but when all three trains came to rest it was found that the two engines of the Liverpool train had mounted the wreckage and overturned. The tangled mass of wreckage completely buried the engine of the Perth train and severely damaged parts of the station footbridge.

The eight coaches of the Liverpool train came to rest with the leading end supported by the heap of wreckage. The first five coaches of the Perth train were involved in the general disintegration, but its other vehicles stood on the rails. Three vehicles of the train from Tring were more or less demolished, but the leading six kept to the rails.

A total of 14 coaches was demolished and there was severe damage to engines involved. The coaches of the Tring train had a high passenger-carrying capacity, and were more heavily loaded than usual. Mr. Hearn agreed with Colonel Wilson that the last three coaches of the Tring train were an unrecognisable mass.

Mr. F. W. Abraham, Motive Power Superintendent, London, Midland Region, told Colonel Wilson that he thought the engine of the Perth train went under the local train and pushed the undercarriages forward. Replying to another question by Colonel Wilson, Mr. Hearn said that of the first five coaches of the Perth train that were demolished, some carried on and rode over the Perth engine and others were thrown.

Mr. J. H. Knight, Divisional Outdoor Assistant, C. & W. Engineer's Department, described the damage to the Manchester train. As far as the kitchen car, everything was completely destroyed, but coaches at the rear of the kitchen car were only superficially damaged.

In later evidence, Mr. S. G. Hearn said that co-ordination between railway rescue teams and outside bodies was achieved through an emergency control office, which was set up at 9.15 a.m.

Mr. J. Taylor-Thompson, Civil Engineer, L.M.R., said that damage to the track involved renewal of 100 yd. of the up fast line; about 150 yd. of the platform walls were either destroyed or badly damaged. A 15 in. water main was broken by the engine of the Manchester train, but water was speedily shut off.

Mr. G. A. B. Leishman, Electrical Assistant, said electric current on the up line was switched off automatically when the line was damaged. The supply to the down line was stopped a few minutes later at the request of the signalman. The stretch of line was promptly isolated.

Mr. C. S. Rollinson, Stationmaster at Harrow & Wealdstone, gave evidence that when he went on duty at 8 a.m. on the morning of the accident there was mist, but no real fog. His general impression was that visibility was improving. He could see at least 200 yd.

He was on No. 4 platform when the Tring train arrived at 8.17 a.m., about seven minutes late, and was standing near the front when the accident occurred. He said the train for Liverpool and Manchester arrived less than 20 sec. later. His view was obscured by the Tring train, but he saw the front engine pass beneath the bridge. Steam had not been cut off, and he heard no brakes applied.

He went to the signal box and helped the signalman outside to get air. The signalman was allowed to work under normal conditions if there was visibility of 200 yd. It was his impression that on that morning the signalman would be entitled to work normally.

Evidence by the Station Foreman at Harrow & Wealdstone estimated that the time between the two collisions was about two seconds. The signalman at Hatch End box agreed with Colonel Wilson that when the two trains passed his box the Perth train was running three minutes behind the local. He added that by the time the Perth express passed him, the local train would either be crossing the junction at Harrow or would have arrived at the up fast platform. During the signalman's evidence, Mr. S. G. Hearn said the accident was timed to have occurred at 8.18 a.m. The Tring train arrived in the station at 8.17 and was estimated to have been standing there for a minute.

### Visibility Conditions

Relief Signalman A. G. Armitage said the day of the accident was his tenth day at Harrow No. 1 box, but he had previously taken charge of this box, and he felt quite familiar with the work. He took over at Harrow No. 1 box at 6 a.m. on the day of the accident, when it was dark and inclined to be misty. Fog regulations were not in force when he took over, but he put them on at 6.35 a.m. when the mist got slightly thicker. By 8 a.m. he could see possibly 400 yd.

At 7.58 a.m. he accepted the 10.20 p.m. Glasgow to Euston overnight train, and it passed his box at 8.11 a.m. The next train on the up line was the 7.31 a.m. train to Euston on the up slow line, which he accepted at 8.7 a.m. It entered the section at 8.14 a.m. and arrived in the station at 8.17 a.m. He then accepted the 8.15 p.m. from Perth at 8.11 a.m. and received "train entering section" for it at 8.17 a.m.

He did not pull off his signals for the local train until he received line clear from North Wembley, which he got at 8.14 a.m. He sent the local train across in front of the Perth express because it was a booked route.

Mr. S. G. Hearn confirmed that the 7.31 a.m. suburban train from Tring was scheduled to run on the fast line from Harrow to enable an empty stock train to run on the slow line at that time. The procedure was started about three years ago. The policy was to take suburban trains in quickly when they contained from 700 to 800 passengers, and get them to their destination quickly even if that meant two

or three minutes' delay for an express already running late. He agreed that the signalman had acted strictly in accordance with the book. It was not for the signalman to vary regulations, and there was no need on that occasion.

Signalman Armitage continued that he watched the approach of the Perth train and saw it just past his outer home signal, coming up fast. He could tell by the sound of the train that it was travelling at speed and not obeying his signals. It made no attempt to pull up at his signal. He immediately applied the emergency detonators on the up fast line, and the second action was to protect the Euston-Manchester train by replacing the signals on the down fast line to danger. He knew that train was in section and the signals were all clear. The Manchester train made no attempt to stop at the inner home signals. It appeared to be still under power, and he did not hear the brakes go on at all. The shots went off all right.

In further evidence, Signalman Armitage said he put up the signals behind the local train as soon as it came through from slow to fast. He was certain the up signals were on when the express came through about three minutes later.

Fireman G. Dowler of the Manchester and Liverpool train said he did not think they were doing more than between 40 and 50 m.p.h. just before the accident. He had been firing up and had brushed down the footplate, and did not see anything in front at all. When the collision came he was thrown forward first and then seemed to have fallen down a hole between engine and tender.

Driver A. W. Payne, of the Tring train, said he had no difficulty in seeing the home signal and generally speaking the up distant signals at Harrow No. 1 were good. He did not remember seeing the up fast distant because he was concentrating on his own home signal.

Fireman A. R. Hine, of the Tring train, said he spotted the Harrow distant signal when it was only 20 yd. away because of the bad visibility.

The inquiry was then adjourned until the next day, October 16.

### Second Day's Hearing

When the inquiry was resumed on October 16, Guard J. Kent of the Perth express said he was due out of Crewe with that train at 4.5 a.m.

Colonel Wilson observed that the train had been punctual as far as Wigan, where it ran into fog, and arrived at Crewe at 4.2 a.m. instead of 3.49 a.m. He asked why 35 min. had been spent at Crewe instead of the 16 min. booked.

Mr. W. B. Shelton, Divisional Operating Superintendent, Crewe, explained that the changing of engines and all station movements were hampered by fog, which was very dense.

Guard Kent, resuming his evidence, said the train would be 90 min. late by the time the accident happened. Two extra stops were made, at Nuneaton, and Rugby, because of diversion of other services on account of the resignalling at Euston. They continued to lose time, on account of fog, up to Watford. In his opinion the delay was caused because the driver had to find his signals. They went through the Watford tunnel at between 5 and 10 m.p.h. When they came out he dropped his window and looked out. He could see the platform, somewhat clear of fog. The signals at Watford were clear and the fog was clearer than before. The driver was up to normal speed. He then put his window up and got on with his work. He was still engaged in doing that when the accident happened; he estimated the speed to be between 50 and 55 m.p.h.

Asked how soon before the collision the brake went on, he said it would be "a matter of seconds." The vacuum gauge went right to zero. Informed by Mr. F. W. Abraham that this would take from 5 to 10 sec. after a full brake application, Colonel Wilson said this was a most important point, and he should have precise information on it. In further evidence, Guard Kent said he did not hear any detonator.

Driver R. Brown, of a freight train from Norwood to Northampton, said he had been stopped by signal at Harrow, where visibility was 50 to 100 yd.

Driver F. B. Halliburton, of the Glasgow-Euston express preceding the Perth train, said visibility was about 50 yd. until he got to Euston. He could find his signals quite clearly, however, even semaphores, and picked out the Harrow distant at a range of about 50 yd.

Two sleeping car attendants and a ticket inspector on the Perth train, said they had felt or heard the brakes go on just before the accident.

Guard T. J. Starmer, who had been on the down slow line on a train of empty wagons, gave evidence that the Perth train passed him about Headstone Lane. It was running at normal speed for an express and he thought the up fast signal was showing yellow. He had no impression that the express was going to pass the home signals at danger.

Evidence was given by other witnesses of the record of Driver Jones of the Perth train, who was killed in the crash. He had been in normal health and was not a nervous man. He had been over the route 38 times when the accident occurred. His fireman, C. Turnock, also killed, did not work regularly with Jones. He was aware of the importance of the responsibilities for observing signals.

Mr. S. Williams, Signal & Telecommunications Engineer, L.M.R. who was a passenger in the Tring train, said he knew of no occasion when the distant signal had shown a false colour. If the light in the yellow aspect failed, an auxiliary light was immediately illuminated in the signal, the repeater indicator in the signal box went to "failed," and a buzzer sounded in the box. In such circumstances the regulations required that trains should be stopped and drivers warned that a signal had failed.

He had checked the levers in the box immediately after the accident and satisfied himself that the locking was effective, and checked the track indicators. A telegraph inspector confirmed the correctness of the mechanical and electrical locking, and the operation of the annunciator.

### Inspecting Officer's Statement

Colonel Wilson then announced that he would adjourn the inquiry until a date to be announced, to hear further evidence. The fact that the Euston-Manchester train ran into the wreckage of the other two trains was due to nothing more than mischance, he continued. Nothing could have been done by railwaymen or anyone else to prevent the second collision when the first had occurred. Nothing could be more untrue or unfair than to suggest that the slightly late running of the Euston-Manchester train contributed to the second accident.

In an accident of that magnitude, with so much evidence to sort and sift for use as the basis of his conclusions, the preparation of his report was bound to take a little time. In view of the great public interest and the concern about this accident he was going to take a rather unusual step. His conclusions would be published in the report, with any recommendations as to any measures that might be desirable to prevent recurrence.

There was no doubt in his mind that the primary cause of this accident was that the distant signal at caution and the two stop signals at danger were run past by the Perth express at a speed which is difficult to estimate exactly but which was certainly high.

The line was equipped with the most modern block apparatus to assist the signalman and to prevent him from making mistakes—the most modern in the country, short of continuous track circuiting and colour-light signals, which could only be justified in very special circumstances. It must be asked whether any safeguard could be provided to prevent running past of signals—and running past at high speed.

Whatever the cause of the accident, he doubted whether the circumstances in which signals were passed at caution and danger would ever be really satisfactorily explained.

### Remarks on A.T.C.

There was a signalling device designed to guard against the passing of signals at danger which was known as automatic train control. When nationalisation of the railways took place in 1948 the Railway Executive made the question of automatic train control one of their first studies, and it was notified in the B.T.C. report for 1948 that the Commission had accepted in principle the extension of A.T.C. to all main lines in Great Britain. At that time there were two automatic train control systems in existence. The physical contact system covered most of the main lines of the former Great Western Railway; the other, a magnetic system, had been installed on the Tilbury-Southend line of the former L.M.S.R. for the past 14 years.

It was not considered that either of the two systems would be wholly suitable to perpetuate as standard for British Railways in meeting all conditions, including long-term progress in further developments of electrification, and there was the question of snow and ice in the north.

It was also difficult, he understood, to adapt the G.W.R. apparatus to locomotives in service on other main-line railways. Since 1948 the Railway Executive had been engaged in a series of experiments directed to devising a system which embodied the best features of both types.

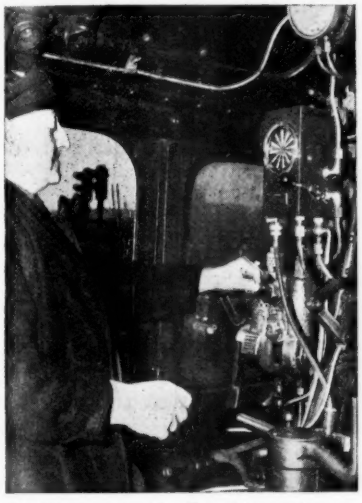
He understood within the last few days from the Chairman of the Railway Executive that a good many technical difficulties had been encountered in working out these experiments, and that what they hoped to be a final prototype design had now been settled. The unit apparatus was now going through workshops and would be fitted in the immediate future on certain locomotives for trial under main-line conditions.

The modified design would have to be approved as an entirely safe system of signalling apparatus. When that was done immediate consideration would be given by the Commission to initiation of an extensive programme of automatic train control on British Railways. He would have to be satisfied that the experiments with the new apparatus, in which efforts were being made to combine the best features of the two systems, had been forced on in the last four years with the vigour that the situation demanded.

## Service Tests of New A.T.C. Equipment

On October 17 the final prototype of the new experimental A.T.C. equipment for British Railways was tested for the first time in ordinary service conditions on the 3.10 p.m. express from Kings Cross to Newcastle. This was the apparatus referred to by Lt.-Colonel G. R. S. Wilson, Chief Inspecting Officer of Railways, on October 16, when adjourning his inquiry into the accident at Harrow & Wealdstone, L.M.R., on October 8 (see page 470).

Mr. John Elliot, Chairman of the Railway Executive, was present at the departure of the express from Kings Cross on October 17, and spoke to Press representatives of the course and purpose of the British Railways experiments with A.T.C., which have reached a new stage with the fitting of the final prototype in the Pacific locomotive No. 60130, *Kestrel*. He said the



*Prototype A. T. C. cab equipment installed in Eastern Region Pacific locomotive*

apparatus had been developed over a period of four years since the British Transport Commission decided to adopt warning control as a principle. The final equipment would have to operate in all kinds of traffic, signalling, and climatic conditions and would have to be approved by the Ministry of Transport inspectorate. Five more locomotives were being equipped with the prototype apparatus.

Track equipment for the new A.T.C. system had been installed in the down main line between New Barnet and Huntingdon. The apparatus was a combination of the Hudd type of inductive link employing permanent and electromagnets on the track, with the Western Region form of cab indications. Mr. Elliot emphasised that the present installation was a prototype, and that the apparatus finally adopted would have to show its ability to stand up to conditions all over the British Railways system. The equipment had been developed by the technical and research staff of British Railways under the direction of Mr. R. A. Riddles, Sir Michael Barrington Ward, and Mr. J. C. L. Train.

### Inspection of Apparatus

The cab apparatus is contained in a case which incorporates a cancelling handle and indicator similar to those of the Hudd system. Unlike the Southend line form of the Hudd apparatus, however, the "clear" indication is a bell and the "caution" sign a horn. It is felt that these are more distinctive than the short and long horn blasts, for "clear" and "caution" respectively, of the normal Hudd installation. A local battery is carried on the locomotive for energising the circuits made by deflection of the magnetic receiver armature when it passes over the track magnet. No provision has been made for a "double yellow" warning in the prototype now on trial.

## Press Comment on A.T.C. Development

Public concern at the Harrow & Wealdstone accident of October 8 gave rise to much correspondence in the press on the desirability of extending automatic train control. Many correspondents advocated wider use of the former G.W.R. system, which has been operating successfully for some 40 years and is installed on all principal main lines of the Western Region. In the *News-Chronicle* of October 11 a letter from Mr. Charles Higham said: "Since 1946 there have been six serious accidents through train collisions, and all of them in Regions other than the Western Region. This is because the automatic safety system operating in this region makes it impossible for a train to enter a section occupied by another train. The Railway Executive has refused to extend this system to other Regions. This must not be allowed. The Executive must be compelled to extend it to the whole country."

A reply from the Railway Executive was published as a footnote to the above letter. The footnote read: "The Western Region system would not work in other Regions because of different signalling methods and electric rails. We have been experimenting for three years to find a method which would work everywhere. Estimated cost of installing national automatic train control is about £10 million. We don't want to spend such a sum and then find the system imperfect."

These statements by the Railway Executive were challenged in a letter published in the *News-Chronicle* of October 14 from Mr. F. H. D. Page, formerly Signal & Telegraph Engineer, Great Western Railway, who wrote: "Having been intimately associated for over 40 years with the development and installation of the Great Western system of automatic train control, I cannot let the Railway Executive's reply to Charles Higham pass unchallenged.

"It has already been demonstrated that the Western Region system can be adapted without great expense to the different signalling methods in other regions, and I think this can apply equally to the problem of electric rails.

"Three years' experimenting appears to me a very long time to go without finding an alternative method—especially with the advantages that might be expected as a result of nationalisation."

After the trial run on October 17 with the final prototype of the apparatus now being developed by British Railways, some comments by Sir Felix J. C. Pole, formerly General Manager of the Great Western Railway, were quoted in the *Sunday Express* of October 19. His reported observation on the statement made at Kings Cross before the trial run that development of the new equipment had been in progress for four years was: "it is humbug to talk about four years of experimenting when they already have on the Western Region a safety apparatus which has proved its efficiency for 40 years." He thought it "fantastic" to suggest that snow might interfere with a contact system of A.T.C. and asked: "does the Railway Executive imagine that snow is unknown in Wales or the West Country?"

A full account of the Western Region A.T.C. system appeared in our April 15, 1949, issue. As at present arranged, the locomotive shoe is raised and locked at a height out of possible contact with the centre live rail when running on sections electrified with that system.

## Staff & Labour Matters

### Railway Wage Claim

The Railway Staff National Tribunal under the Chairmanship of Sir John Forster published on October 22 its decision on the claim of the three railway unions for an increase in rates of pay of salaried and conciliation staff and for a revision of the provisions relating to payment for Saturday afternoon duty.

In its decision the Tribunal summarised the main arguments of the trade unions in support of the claim:—

(*a*) The percentage increase in rates of pay now claimed is justified by the continuing rise in the cost of living.

(*b*) Increases in railway pay to meet the cost of living compare unfavourably with increases in other industries.

(*c*) Adequate rates of pay are essential to attract and retain the right type of staff.

(*d*) Saturday afternoon duty involves the staff concerned in a loss of social amenities and the extra payment for such duty is at present inadequate.

(*e*) The existing provisions which relate extra payment for Saturday afternoon duty to the time of booking on give rise to anomalies and payment on a time basis would be a fairer arrangement.

The main arguments advanced on behalf of the Railway Executive were stated to be:—

(*a*) The present rates of pay are reasonable having regard to the opportunities and facilities available to the staff and the application for an increase is not justified in view of the improvements in rates of pay and conditions of service, particularly in the past two years.

(*b*) Improvements in railway wages and earnings compare reasonably well with those of workers in industry generally.

(*c*) Labour turnover on the railways is less than in manufacturing industries and difficulties in recruiting and retaining staff now exist only in certain areas where there is considerable competition for manpower.

(*d*) Present provisions for payment for Saturday afternoon duty are satisfactory, and generous compared with those in other industries which are in operation 24 hr. every day.

(*e*) The Railway Executive is prepared to discuss with the railway unions, through the Railways Staff Conference representations, anomalies arising from provisions for extra payment for Saturday afternoon duty.

### Tribunal Award

The Tribunal after giving careful consideration to the statements and submissions of the parties upon the claims which

are common to the three railway unions found as follows:—

(*a*) That as from the commencement of the first full pay week following November 1, 1952, the existing rates of pay of conciliation staff and railway salaried staff covered by the machinery of negotiation should be increased by the undermentioned amounts:—

| | | |
|---|---|---|
| For adult males | by | 7s. 0d. a week |
| ,, junior males | ,, | 4s. 0d. ,, |
| ,, adult females | ,, | 5s. 6d. ,, |
| ,, junior females | ,, | 3s. 0d. ,, |

(*b*) The Tribunal found against the claim as laid for premium payments for work performed between 12 noon and midnight on Saturdays, but in view of the willingness of the Railway Executive to enter into discussions with the unions through the medium of the Railways Staff Conference upon any alleged anomalies claimed to have arisen out of the application of the award in relation to Saturday working contained in Decision No. 13 and to consider what adjustments might properly be made within the principle underlying the said award to overcome anomalies disclosed, the Tribunal suggested that such discussions commence forthwith.

### Engineers' Wage Claim

Negotiations were resumed on October 21 between representatives of the engineering employers and leaders of the engineering trade unions in connection with the men's wage claim. It is understood that an offer was made by the employers' representatives and this was being considered by the C.S.E.U.

## Parliamentary Notes

### Manchester—London Road Services

The refusal of the Minister of Transport to reverse the decision of the licensing authority for the North-Western area not to permit unrestricted motorcoach services on the Manchester—London route was the subject of a written answer in the House of Commons on October 20 by Mr. A. T. Lennox-Boyd, Minister of Transport.

Replying to Mr. A. F. Holt (Bolton West—L.) and Mr. E. S. T. Johnson (Blackley—C.), Mr. Lennox-Boyd said that in October, 1951, the licensing authority for the North-Western area refused applications by the companies concerned for unlimited duplication of their services between Manchester and London. The companies appealed to him under Section 81 of the Road Traffic Act, 1930, and he upheld the licensing authority's decision.

The restrictions on duplication which had been continued as a result of these decisions had existed since 1933 and were in accordance with long-established principles applied to long-distance road services competing with backbone railway services.

### Mailbag Thefts

Mr. L. D. Gammans (Assistant Postmaster General) told Mr. W. T. Proctor (Eccles—Lab.) in the House of Commons on October 15 that the estimated loss involved in mailbag thefts during the 12 months to September 30, 1952, was about £290,000. When mailbags were lost on the railways they were the responsibility of the railways.

Earl De La Warr (Postmaster General) in the course of a reply to a question by the Earl of Listowel in the House of Lords on October 14, said that besides tightening up the Post Office arrangements they were working in very close co-operation with the railway authorities, who were solely responsible, under contract, for all mails committed to their charge.

## Questions in Parliament

### Argentine Railway Companies' Claims

Mr. W. Teeling (Brighton, Pavilion—C.) on October 20 asked the Secretary of State for Foreign Affairs how far negotiations for the settlement of the claims of Primitiva Gas and Buenos Aires Railways had progressed.

Mr. Anthony Nutting (Parliamentary Under Secretary of State for Foreign Affairs) wrote in reply: Her Majesty's Government is endeavouring to induce the Argentine Government to promote a rapid settlement with the companies. A memorandum on this matter was formally presented to the Argentine Government on August 7; no reply has yet been received.

### Railwaymen and National Service

Mr. J. A. Sparks (Acton—Lab.), on October 20, asked the Minister of Labour, if he would take steps to exempt from national service railwaymen occupying key positions.

Sir Walter Monckton wrote in reply: I cannot exempt anyone from his liability under the National Service Acts but if, as I assume, the suggestion is that the call-up of certain men employed on the railways should be deferred so long as they remain on this work, I could not in present circumstances agree to any further arrangements of this kind.

### Iron and Steel Production

Mr. Maurice Edelman (North Coventry—Lab.), on October 20, asked the Minister of Supply, what was the estimated production of iron and steel for 1952 and 1953, respectively.

Mr. Duncan Sandys wrote in reply: There are good prospects that in 1952 at least 16 million tons of ingot steel and over 3¼ million tons of iron castings will be produced. Provided there are no unexpected difficulties over raw materials, ingot steel production in 1953 should exceed the previous record of 16¼ million tons by a substantial margin.

## United Railways of the Havana Capital Reorganisation Scheme

*Need to simplify capital structure to facilitate any possible sale negotiation*

The stockholders of the United Railways of the Havana & Regla Warehouses Limited are studying a scheme issued by the boards of the company and the Havana Terminal Railroad Company for the financial reorganisation of the two companies.

In a circular the United Railways of the Havana directors state that, although they recognise that it is unusual to submit proposals for reorganising the capital in circumstances where there is no prospect of operations being conducted at a profit, there are cogent reasons why a scheme should now be presented. The over-riding reason is that the present capital structure of the United Company, which is further complicated by a rental agreement with the Havana Terminal Railroad Company, is so involved that no offer to purchase the railway could be accepted without first going through the major process of agreeing the division of the proceeds of sale among the ten publicly-held classes of loan and share capital of the two companies. The board therefore considers it vital to reduce the numbers of separate classes of loan and share capital to a minimum and to reach agreement beforehand on the division of the proceeds of a sale. As from indications before the board it is possible that negotiations may take place in the near future for sale or nationalisation of the railway, it feels that it must be in a position where negotiations would not be hindered by the involved capital structure of the companies, and that it should be empowered to carry out the sale of the undertaking in Cuba without reference to holders of the loan and share capital.

Also, it is undesirable to maintain the present practice of short-term schemes of arrangement between the company and the holders of the loan capital, first resorted to in 1930, which have entailed heavy expenses. In 1945 the company obtained the support of a majority of each class of loan capital to a reorganisation scheme. A strong minority in certain classes opposed that scheme, which was ultimately withdrawn. It is thought that holders of the loan capital are entitled to expect the board to bring forward further proposals in an effort to reach a final settlement.

Under the scheme the share capital is to be reduced from £11,015,000 (divided into £3,555,000 5 per cent preference stock, £6,860,000 ordinary, and £600,000 deferred ordinary) to £3,457,000 (divided into £2,133,000 preference, £1,311,000 ordinary, and £13,000 deferred stock). This is to be effected by nine cancellations, including cancellation of unissued shares and writing down of the preference stock by 40 per cent, the ordinary stock by 80 per cent, and and the deferred stock by 95 per cent. All special rights attached to the three classes are then to be abrogated, the stocks amalgamated into one class of consolidated stock and the capital restored to £11,015,000 by the creation of a further £7,065,000 of consolidated stock and 493,000 unclassified £1 shares. Preference dividend arrears are to be cancelled.

The loan capital is to be reorganised by the issue to existing holders, including holders of the 5 per cent mortgage debentures and debenture stock of the Havana Terminal company, of three newly created income loan stocks—£850,000 4 per cent first "A" stock, £1,500,000 4 per cent first "B" stock, and £3,500,000 5 per cent second stock.

All the existing loan capital, including the Terminal debentures, is to be surrendered to the trustees of the new stocks who will hold it as security, but the company is advised that as a result of the scheme the maximum principal amount recoverable under such security outside the United Kingdom will be limited to £5,850,000, the aggregate nominal amount of the first and second stocks now proposed to be issued. The directors point out, however, that this amount may not suffice to repay the whole of the principal payable in respect of the first and second stocks.

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The first and second income stocks will be redeemed only out of moneys (a) received in respect of the sale or expropriation of any of the assets of the United company or of the Terminal company charged by way of specific security; (b) received under any insurance policy in respect of property so charged; or (c) becoming available as a result of enforcement of any security for the existing loan capital. After the complete redemption of the first stock the company may pay off unsecured creditors outside the United Kingdom (which are understood to amount to between £2,000,000 and £3,000,000) and provide for compensation of staff and so on. Thereafter the balance available is to be divided as to two-thirds to the second stock, subject to a limit of the par value of that stock, and one-third to the consolidated stock.

In explanation, the directors state that on any realistic view the holders of the new consolidated stock must participate in the proceeds in the event of a sale of the greater part of the assets or of the undertaking in Cuba. It is therefore necessary to give the consolidated stock a proportion of the surplus after paying off the first stock. It follows from this that the unsecured creditors outside the United Kingdom must be provided for before the division is made between the second and consolidated stocks as otherwise the mere mechanics of a sale might materially alter the shares of the two stocks.

The allocation of the new stocks among the classes of existing stockholders is set out in the following table (except where otherwise stated the amounts shown are in respect of £100 of an existing stock).

| Existing Stock | Income Loan Stocks | | Consolidated Stock |
|---|---|---|---|
| | 4 per cent 1st "B" | 5 per cent 2nd | |
| | £ | £ | £ |
| 5 per cent United (1906) ... ... | 15 | 30 | 55 |
| 4 per cent United | 5 | 25 | 50 |
| 4½ per cent Cuban | 50 | 50 | — |
| 5½ per cent Cuban | — | 20 | 60 |
| 4½ per cent Western | 10 | 62½ | 27½ |
| 5 per cent Preference ... ... | — | — | 60 |
| Ordinary ... ... | — | — | 20 |
| Deferred Ordinary | — | — | 5 |
| 4½ per cent United (In relation to bonds of £19 15s. 6d. each) | — | 3 per bond | 13 per bond |

In the case of the Terminal debentures £100 of 4 per cent first "A" stock and £100 of consolidated stock will be allocated for each £100 of debentures or debenture stock held. The trustees of the first and second stocks will have the right to appoint a proportion of the directors of the United company.

It is an integral part of the scheme that the board is given power, with the consent of the directors to be nominated by the trustees, to sell the whole or any part of the assets of the United company or the Terminal company for such consideration as it thinks fit without the consent of the trustees or reference to the holders of any stock and free from any existing security.

EAST KENT BUS FARES RAISED.—An application by the East Kent Road Car Co. Ltd. to increase its fares has been granted by the licensing authority. The higher fares take effect on October 27. The increases range from ½d. ton fares between 2½d. and 5d., to 2d. on single fares of 2s. 6d. and upwards; season tickets are being increased 10-12 per cent.

## Contracts & Tenders

The Canadian Pacific Railway has placed orders for 73 diesel locomotives valued at $15,000,000 with three Canadian firms. The new motive power is scheduled for delivery during the summer of 1953 and will completely dieselise operations on the Kettle Valley and Kootenay Divisions of the C.P.R. in southern British Columbia for both goods and passenger service. The new order will bring to 355 the number of diesels operating on Canadian Pacific lines. The orders have been placed as follows:—

Canadian Locomotive Co. Ltd.: Six 1,600 h.p. "A," or front end units; four 1,600 h.p. "B," or booster units.

General Motors Diesel Limited: 10 1,500 h.p. streamlined "A" units for goods and passenger service; four 1,500 h.p. "B" units for goods service; 14 1,500 h.p. road shunters; six 1,200 h.p. shunters.

Montreal Locomotive Works: Two 1,600 h.p. streamlined "A" units for goods and passenger service, and 10 of the same type of engines for goods service; two 1,600 h.p. "B" units for goods and passenger service and six for goods service; four 1,000 h.p. shunters and five 660 h.p. shunters.

A recent Reuter's report from Karachi states that the Government of Pakistan has ordered 19 broad-gauge diesel-electric locomotives from the U.S.A. for the North Western Railway. Nine locomotives are for main line passenger services and are being built by the American Locomotive Company; they are expected to be delivered by April, 1953. The General Electric Company of America is building for shunting service 10 locomotives, which it expects to deliver to Pakistan by July, 1953.

Vereinigte Westdeutsche Waggonfabrik A.G. (Westwaggon) has received from the Portuguese East African Railways an order for 29 narrow-gauge passenger brake and luggage vans; 11 tank wagons; and two bogie well-wagons.

Siegener Eisenbahnbedarf A.G. has received an order from the German Federal Railways for 1,000 container wagons.

Klöckner-Humboldt-Deutz A.G. has received orders for seven standard-gauge 450 b.h.p. diesel-hydraulic locomotives for railways in Luxembourg.

Henschel & Sohn G.m.b.H. has received an order from the Spanish National Railways for 20 diesel-electric locomotives of about 550 b.h.p. for heavy shunting on 5 ft. 6 in. gauge lines.

Head, Wrightson & Co. Ltd., has been awarded a contract by John Summers & Sons Ltd., Shotton, for doubling the pig iron output of the plant at present under construction. Head Wrightson is at present completing construction of a plant at Shotton for the anticipated production of approximately 1,000 tons of pig iron a day.

## Notes and News

**Vacancies for Two Civil Engineering Assistants.** — British Railways Eastern Region require the services of two civil engineering assistants. See Official Notices on page 475.

**Civil Engineering Assistant Required.**—Applications are invited for the post of civil engineering assistant required for the Civil Engineer's office in London of British Railways, Eastern Region. See Official Notices on page 475.

**Crown Agents for the Colonies.**—Applications are invited for the post of senior stock verifier required by the Government of Nigeria for the railway department, for one tour of 18 to 24 months in the first instance. See Official Notices on page 475.

**Argentine Diesel Services.**—In the overseas columns of our September 19 issue it was stated that the new express service between Buenos Aires and Mendoza, General San Martin Railway, was operated by diesel-electric sets. We are informed that it is worked by Ganz diesel-mechanical sets.

**Historical Model Railway Society.**—Mr. D. S. M. Barrie, Public Relations Officer, Railway Executive, will read a paper on "The Railways of South Wales" to the Historical Model Railway Society on November 10. The meeting will be held at the Headquarters of the Stephenson Locomotive Society, 32, Russell Road, W.14, at 7 p.m.

**David Brown Companies London Headquarters.**—The David Brown Companies have recently acquired the first floor suite of 96, Piccadilly, London, W.1, as a new London headquarters. As from Monday, October 27, the present London office sales staff will be transferred from Bush House, London, W.C.2, to the above address (telephone Grosvenor 7747). For the time being the London office of David Brown Tractors Limited, will remain at 49-50, Avenue Chambers, Vernon Place, Southampton Row, London, W.C.1, but this will be transferred about the end of the year. The actual date will be notified in due course.

**Accident to Durban-Johannesburg Mail Train.**—Twenty-one Africans are known to have been killed and about 50 were injured when the night mail train from Durban to Johannesburg was derailed at Heavitree, 12 miles from Estcourt, on the Natal electrified section, in the early hours of October 20. Some Europeans were also injured. The derailment occurred on a curve immediately after the train had passed through Heavitree. The first ten coaches left the line, one of the coaches slewing round and coming to rest on top of another. Power failed after the coaches had knocked down the overhead standards.

**Northern Ireland Transport Tribunal Report.**—In the Northern Ireland House of Commons the Minister of Commerce said that he had been informed by the Chairman of the Transport Tribunal that he expected the Tribunal's Report of its special inquiry into transport to be presented to him early in November. The Bill relating to the Great Northern Railway would be complex, more so as it had to be co-ordinated in detail with the corresponding legislation to be introduced in Dublin. He could give no clear undertaking when he would be able to present the Bill to Parliament. Good progress was being made and he was fully alive to the importance of having the G.N.R.(I.) taken over by the new Board as soon as possible. In the meantime it was necessary to continue making payments to the railway to enable it to keep services running. The supplementary estimate of £325,000 which he was

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now submitting was a figure which had been calculated after consultation with the company. It represented the Northern Ireland share of the total loss likely to be occasioned by the undertaking between July, 1952, and March 31, 1953.

**Reinstatement of Greenwich Time.**—Reversion to Greenwich Time from Summer Time will take place on Sunday next, October 26. Trains leaving England for Scotland on the night of Saturday, October 25, will therefore reach their destinations one hour earlier, and a number of connecting services on October 26 have been retimed in consequence.

**Advertising South Coast Excursions.**—The Southern Region has issued two new posters, one of which is reproduced, to attract attention to excursions from

*One of the Southern Region posters drawing attention to facilities for cheap trips to the seaside*

London to the South Coast. The posters, which are produced by silk screen process and in colour, are displayed, where possible, over a letterpress poster giving details of the timings and fares.

**Model Engineer Exhibition.**—The 1952 Model Engineer Exhibition was opened at the New Horticultural Hall, London, S.W.1, by the Duke of Edinburgh on October 20. Special features include radio-controlled water-borne and other scale models in operation, a 370 ft.-long 1 in. to 1 ft. scale racing car track, and a constructional demonstration section at which lathe work, brazing, home foundry work, lining out of model locomotives, the making and laying of scale railway track, and other examples of craftsmen's methods may be seen. The Society of Model & Experimental Engineers is again running a passenger-carrying railway with steam traction, and working layouts from gauge "O" downwards are shown at some of the club and trade stands. The locomotives and rolling stock on view in the competition and loan sections again illustrate the skill and precision of the many amateur model makers who look to the railway for their prototypes. Exhibits in these classes range from a 10¼ in.-gauge "Royal Scot" class 4-6-0 locomotive weighing 20 cwt., to a 7 mm. to 1 ft. scale Emett-type locomotive, *Nellie*, and coach. The exhibition is open daily, from 11 a.m. to 9 p.m., until October 29.

**British Railways Record Weekend Coal Carryings.**—Weekend clearance of deep-mined and opencast coal by British Railways up to 6 a.m. on October 20—371,370 tons—was the biggest since April, and brought the week's total up to 3,224,910 tons. During the week ended October 11, 210,939 tons of iron and steel were conveyed from the principal steelworks and some 289,000 tons of iron ore were carried.

**B.T.C. Catering for Harrow Rescue Workers.**—The many volunteer and official rescue workers at the Harrow rail disaster were served with continuous relays of hot meals and beverages by British Transport catering services. As soon as news of the accident reached Euston, equipment and staff were mobilised and rushed out to Harrow. In the first 24 hours, 6,000 hot meals and a constant flow of hot soup, tea and coffee were shuttle-serviced from the refreshment rooms at Euston to the scene of the accident and kept hot in new type portable ovens.

**Institute of Transport Diploma for Netherlands Railways President.**—Mr. F. Q. den Hollander, President of the Netherlands Railways, was presented on October 21 with a special diploma certifying his election as an Honorary Member of the Institute of Transport. The presentation was made by Mr. C. T. Brunner, President of the Institute, at the conclusion of Mr. den Hollander's talk on "Railway Organisation and Management in the Netherlands," given to a joint meeting of the Anglo-Netherlands Society and the Institute, to which editorial reference is made this week.

**PVC Plastics in Conveyor Belts.**—The Scientific Department of the National Coal Board has recently published Research Paper No. 1, dealing with the use of PVC in the manufacture of non-inflammable conveyor belts. The paper has been published as a result of considerable research, and sets out the advantages of the use of such material, and recommends that completely non-inflammable conveyor belting should be developed as a long-term policy in the coal industry, saying that its use would eliminate many of the most serious fire hazards on conveyors, in particular the danger of a fire being generated in the belt by friction, and that of an external fire being spread and intensified by ignition of the belt.

**International Chamber of Commerce.**—The Transport Commission of the International Chamber of Commerce, which met recently in Paris, decided *inter alia* to study the possibility of continuous consultation between transport users and carrying agencies on problems of transport co-ordination. The I.C.C. will represent transport users at regular meetings with the organisations representing the carrying agencies, which include the International Union of Railways (U.I.C.). The I.C.C. Transport Commission considered the growing practice of levying seaport or airport taxes in passenger travel, on which subject a report is to be issued. The second meeting of the reconstituted I.C.C. Commission of Transport Users has been held in Paris under the chairmanship of Mr. A. G. Marsden, of Unilever Limited. It was agreed that each National Committee should aim at close liaison with national transport bodies for the exchange of views on international transport problems. The Commission of Transport Users also considered transport developments in Europe in the next five years occasioned by increased industrial production.

**Accident on Nigerian Railway.**—At least 34 persons lost their lives and many were injured in an accident 21 miles south of Ibadan, in Western Nigeria, on October 15. A crane being hauled to the scene of a goods train derailment to clear the wreckage broke loose from the locomotive, and after running three miles down a gradient crashed into a passenger train.

**New Line in Sind.**—An agency message from Karachi states that the Government of Pakistan has sanctioned the construction by the North Western Railway of a broad-gauge line from Tando Mohd Kahn to Mughalbin, about 70 miles, in the Province of Sind. The line will serve the region which lies on the left bank of the Indus below the Hyderabad-Badin line. It is hoped that it will bring economic prosperity to the poorly developed area which is entirely rural, and create better markets for the agricultural produce. There are extensive Government forests on the left bank of the Indus and the line will therefore afford them cheap and convenient transport.

**B.E.T. Interim Dividends.**—The directors of the British Electric Traction Co. Ltd. have declared the following interim dividends on account of the financial year ending March 31, 1953, payable on December 13, 1952, to stockholders registered in the books of the Company on November 20, 1952, on the 6 per cent cumulative participating preference stock, 3 per cent actual (same), less income tax at the standard rate; on the 8 per cent non-cumulative preferred ordinary stock, 4 per cent actual (same), less income tax at the standard rate; and on the deferred ordinary and "A" deferred ordinary stocks, 10 per cent actual (last year 7½ per cent), less income tax at the standard rate.

**Silentbloc Limited.**—For the year ended May 31 the consolidated net profit, before taxation, of Silentbloc Limited was £211,263, an increase of £24,027. Taxation takes £140,523, against £110,591 last year, leaving £70,740, compared with £76,645 a year ago. The final dividend of 3d. per 2s. share is equivalent to 9d. per share on capital prior to the 50 per cent. bonus issue made last year.

**Display Panel for Compressed Air Engineers.**—Members of the British Compressed Air Society, comprising practically all the important British firms manufacturing compressed air plant and ancillary equipment, are to have a new name sign for display on their exhibiton stands and in offices and showrooms, to draw attention to their membership of the B.C.A.S. The new sign is silk screened in three colours on ¼ in. clear "Perspex" and measures 12 in. by 10 in. The colour scheme of light blue, yellow and white makes a very attractive display. First supplies are now being distributed. The sign was designed by the Society's Honorary Publicity Officer and was printed by Sindall & Baker Publicity Limited, of Watford. Being a technical body of proved value to many industries, it is felt that there is need for making the society better known amongst all who can benefit from its work, whether they are industrial users of compressed air or compressed air equipment manufacturers

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# OFFICIAL NOTICES

*The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged* 18-64 *inclusive or a woman aged* 18-59 *inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order,* 1952.

CIVIL ENGINEERING ASSISTANTS (2) required. Applicants should have had a good general experience in building construction, including re-inforced concrete and ancillary works, preparation of specifications, taking off of quantities of Civil Engineering works. Knowledge of pre-stressed concrete an advantage. Salary ranges—£696 10s. to £734 10s. and £594 to £669 10s.—according to qualifications and experience. Free railway residential travelling within specified limits and other reduced rate travelling facilities after qualifying period of service. Permanency to suitable applicants after probationary period. Five-day week and canteen facilities. Apply in writing giving full particulars as to qualifications, experience, etc., to the CIVIL ENGINEER, Eastern Region, British Railways, King's Cross Station, London, N.1.

TRANSPORT ADMINISTRATION IN TROPICAL DEPENDENCIES. By George V. O. Bulkeley, C.B.E., M.I.Mech.E. With chapters on Finance, Accounting and Statistical Methods. In collaboration with Ernest J. Smith, F.C.I.S., formerly Chief Accountant, Nigerian Government Railway. 190 pages Medium 8vo. Full cloth. Price 20*s.* By post 20*s. 6d. The Railway Gazette*, 33, Tothill Street, London, S.W.1.

CROWN AGENTS FOR THE COLONIES

SENIOR STOCK VERIFIER required by the Government of Nigeria for the Railway Department for one tour of 18 to 24 months in the first instance, either (*i*) with prospect of pensionable employment at a commencing salary according to age and experience in the scale £750 rising to £1,315 a year, or (*ii*) on temporary terms at a commencing salary according to age and experience in the scale £807 rising to £1,453 a year with a gratuity up to £37 10s. for each completed period of three months payable on satisfactory completion of final service. Salary scales shown include expatriation pay. Outfit allowance. Free passages for the officer and his wife and assistance towards the cost of children's passages or their maintenance in this country. Liberal leave on full salary. Candidates must have a thorough practical knowledge of mechanical and electrical machines, tools, plant and instruments used in locomotive, carriage and wagon workshops, running sheds, electrical sub-stations, motor transport and civil engineering workshops. They must also be acquainted with the spares used in the maintenance of locomotives and rolling stock, permanent way, buildings and plant machinery, and have experience of railway stores procedure and general office organisation. Applicants now serving with British Railways would be eligible for secondment and should apply through their local officers. Apply at once by letter, stating age, full names in block letters, and full particulars of qualifications and experience, and mentioning this paper to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting on letter M.33126.E. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

CIVIL ENGINEERING ASSISTANT required for Railway Civil Engineer's Office in London. Applicants should have had a good general experience in building construction, including re-inforced concrete and ancillary works, preparation of specifications, taking off of quantities of Civil Engineering works. Knowledge of pre-stressed concrete an advantage. Salary range £760 to £800 according to qualifications and experience. Free railway residential travelling within specified limits and other reduced rate travelling facilities after qualifying period of service. Permanency to suitable applicant after probationary period. Five-day week and canteen facilities available. Apply in writing giving full particulars as to qualifications, experience, etc., to the CIVIL ENGINEER, British Railways, Eastern Region, King's Cross Station, London, N.1.

LOCOMOTIVE REARAILING AFTER THE WEEDON ACCIDENT. A reprint from *The Railway Gazette*, consisting of 12 pp. in paper cover, describing an interesting and unusual method of Locomotive Rgrailing. Price 5*s.* post free. TOTHILL PRESS LIMITED, 33, Tothill Street, London, S.W.1.

N.E.R. HISTORY.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10*s. 6d.—The Railway Gazette*, 33, Tothill Street, London, S.W.1.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25*s.* per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

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eligible for membership. The new sign is therefore a first step in a publicity drive which the society is planning to launch this autumn.

**Ransome & Marles Bearing Co. Ltd.**—A preliminary statement of results from Ransome & Marles Bearing Co. Ltd. shows an increase in net profit for the year ended June 30 of £12,299, at £357,755, despite higher provision for depreciation (£187,926) and taxation (increased from £326,000 to £430,000). The board recommends transfer to general reserve of a further £100,000, to future taxation (net relief from initial allowances) of £55,151.

**Sheepbridge Engineering Co. Ltd.**—Profits of the group to March 31, at £1,114,107, increased by over 70 per cent. and with the addition of other income gave a total of £1,207,913. The final net profit after allowance for depreciation, directors' remuneration, and taxes, was £372,126, an increase of £67,927. Additional businesses have been acquired during the year so that group assets are shown in the report as £5·1 million, compared with the previous total of £3·5 million.

**Industrial Productivity Conference.**—An industrial productivity conference organised by the British Electrical Development Association will be held at the Institution of Electrical Engineers, Victoria Embankment, London, on October 29 and 30. Its theme will be increased mechanisation through the greater use of electricity, in the interests of industrial prosperity. Mr. Geoffrey Lloyd, Minister of Fuel and Power, will be the principal guest and speaker at the Conference Luncheon in the Savoy Hotel.

**Revision of International Railway Conventions.**—A conference which began in Berne on October 15 has discussed the revision of the international conventions governing the conveyance of goods (C.I.M.) and passengers (C.I.V.) by rail. Some 28 countries have been represented by 100 delegates, the British delegation being led by Mr. D. E. O'Neill, an Under-Secretary of the Ministry of Transport, and including Mr. G. S. M. Birch, Legal Adviser to the British Transport Commission, and Mr. L. H. K. Neil, Continental Traffic Manager, Eastern and North Eastern Regions, representing the Railway Executive. According to international agreement, revision of the C.I.M. and C.I.V. was due in 1943, ten years after their signature in November, 1933, but the war necessitated postponement of revision.

**Eastern Region Arts & Crafts Exhibition.**—In consequence of the success of the Art Exhibition staged for the first time last year, the Eastern Region extended the scope of an exhibition held this year to include photography and crafts. Exhibits were submitted under eleven different sections. This year's exhibition, which took place at Doncaster from October 8 to 11, featured 283 exhibits out of a total of 368 entries. Mr. C. K. Bird, Chief Regional Officer, Eastern Region, opened the exhibition on October 8. Mr. A. R. Ewer, District Motive Power Superintendent, Doncaster, Chairman of the Exhibition Committee, acted as Chairman at the ceremony.

**Mercury and Filament Lighting Combined.**—A range of Holophane twin blended lighting units employing both mercury discharge and filament lamps has been designed for industrial installations where high standards of illumination, good colour quality, and economy in operation are particularly desirable. By embodying the mercury and filament light sources in one composite unit, a colour quality approaching daylight has been obtained and disconcerting two-colour shadows have been largely eliminated. In these units the individual light distributions of the mercury and filament reflectors are carefully matched in order to obtain good colour uniformity in the blended light.

**Holidays in 1951.**—The survey by the British Travel & Holidays Association of the pattern of holidays in 1951 shows that about half the population of the United Kingdom aged over 16 did not take holidays away from home. The rise in the numbers travelling abroad probably caused a slight decline in the total holidays in Great Britain, which was also affected by a decline in the number of "additional" (to the annual) holidays. In travel to and from resorts in Great Britain, 47 per cent of holidaymakers went by train against the 53 per cent shown by the previous census in 1949. The second part of the report deals with holidays abroad (*i.e.* the Irish Republic, other Commonwealth and all foreign countries, but not the Channel Islands, the Isle of Man, and Northern Ireland). Within this definition, 4·4 per cent of the population of the U.K. took holidays abroad in 1951. Countries visited are listed in order of popularity with France first 39·5 per cent, followed by Eire (26·0 per cent), Belgium and Luxembourg (15·0 per cent), and Switzerland and Italy (14·0 per cent each). The report states that the proportion of travellers abroad by air (14 per cent) was lower than might have been expected; 57 per cent travelled by train, and 8·3 per cent by motorcoach.

**Proposal for Royal Commission on Transport.**—Rejecting a suggestion made in the House of Commons at question time on October 21 by Mr. A. W. J. Lewis, Labour M.P. for West Ham North, that the Government proposals for the reorganisation of nationalised transport be postponed until a Royal Commission had reported on the matter, the Prime Minister, Mr. Winston Churchill, said that two Commissions already had been appointed without solving the problem. That was hardly an argument for appointing another.

**Iron and Steel Scrap Prices.**—The Minister of Supply has made an Order consolidating the Iron and Steel Scrap (Nos. 1-6) Orders, 1950-51. With a few minor exceptions maximum prices are unchanged. The Order provides that special prices may be authorised where extraordinary collection costs are involved and for special small sizes. The Order also lays down the method of calculating reductions in the scheduled prices where scrap is delivered elsewhere than at a scrap-consuming works. The Order, the Iron & Steel Scrap Order 1952 S.I. 1952 No. 1665, came into force on September 17, and is on sale at H.M. Stationery Office, price 9d.

**Indo-Pakistan Travel: Introduction of Passports.**—As a result of the introduction of the passport system in India and Pakistan for travel between the two Dominions, the number of travellers between East Bengal and India has been

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greatly reduced. A few days ago the "Chittagong Mail" carried one-quarter of the normal load of passengers, while only 115 crossed the border into Pakistan in the "Barisal Express" instead of the normal 1,500. Air services were even more affected. It is understood that instructions are being issued in West Bengal not to apply the regulations too stringently yet. Meanwhile West Bengal relief officials are endeavouring to relieve the congestion of refugees from Pakistan concentrated at the border stations of Bongaon and Banpur, and in Sealdah Station, Calcutta.

**Beckett, Laycock & Watkinson Anniversary Celebrations.**—To mark the fortieth anniversary of the foundation of Beckett, Laycock & Watkinson, Limited, all the employees of the three factories of the company were invited to a dinner/dance on Friday, October 10. This was held at Porchester Hall, London, W.2, and had an attendance of 400. After dinner, the Chairman and founder of the company, Mr. Joseph E. Beckett, was presented with a cine projector by Mr. Ben Evans, who joined the Company in 1912. Dancing and a cabaret followed the dinner.

## Forthcoming Meetings

October 24 (*Fri.*).—Institute of Materials Handling, at the British Institute of Management, 8, Hill Street, London, W.1, at 7 p.m. "Handling the New Technology," by Mr. L. Landen Goodman.

October 25 (*Sat.*).—Railway Students' Association. Visit to the new satellite town at Crawley, Sussex.

October 25 (*Sat.*).—British Railways, Southern Region, Lecture & Debating Society. Visit to London Airport.

October 28 (*Tue.*) and 29 (*Wed.*).—Institute of Fuel, at the Institution of Mechanical Engineers, Storey's Gate, S.W.1. Conference: "A Special Study of Ash and Clinker in Industry."

October 28 (*Tue.*).—Permanent Way Institution, Leeds Section. Visit to Woodhead New Tunnel Works.

October 29 (*Wed.*).—Railway Students' Association, London School of Economics & Political Science, Houghton Street, Aldwych, W.C.2, at 6.30 p.m. Presidential Address by Mr. C. P. Hopkins. Reception by President, 5.45 p.m.

October 29 (*Wed.*).—Institution of Electrical Engineers, Savoy Place, W.C.2, at 5.30 p.m. Supply Section: Chairman's Address, by Mr. C. M. Cock.

October 30 (*Thu.*).—British Railways, Western Region, London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, at 5.45 p.m. Young Men's Discussion.

October 30 (*Thu.*).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas' Street, S.E.1, at 5.45 for 6 p.m. "Modern Railway Signalling," by Mr. L. J. Boucher, Signal & Telecommunications Engineer.

October 31 (*Fri.*).—Institution of Mechanical Engineers, Storey's Gate, S.W.1, at 5.30 p.m. "Machine Tool Simplification, Especially as Applied to Horizontal Boring Machines," by Mr. C. A. Sparkes.,

November 1 (*Sat.*).—British Railways, Southern Region, Lecture & Debating Society. Visit to London Airport.

# Railway Stock Market

Stock market business remained on a small scale, and movements generally were indefinite, particularly in the industrial sections, although British Funds continued to strengthen. The news from Africa was reflected by marking down of Kaffir gold and Rhodesian copper shares. The waiting attitude in markets is due to many factors, including the coming political controversies on road haulage and steel denationalisation. On the other hand, it continues to be assumed in some quarters that important decisions at the Commonwealth Conference could very well help sentiment next month, and in the event of moderate improvement in demand, prices, particularly in the industrial sections, could respond strongly. The market is none too well supplied with stock, because in the past two months there has been little selling, though on the other hand, buying has been cautious and very selective.

Main attention in foreign rails has attached to United of Havana stocks following details of the proposed capital reorganisation, which is of vital importance to stockholders because simplifying the capital would facilitate a take-over offer, which is now thought likely to be made before long. An adverse vote by any one class of existing stocks could torpedo the whole scheme; and it requires only an adverse vote by 26 per cent in value of those voting in any one class to defeat the proposals. The market realises that it is impossible to forecast the terms that may be offered from Cuba, and whether payment might be offered in cash, Government stock, or perhaps payment over a period from Cuba's sugar sales. Nevertheless it is recognised that the directors would not accept terms that are not fair and reasonable in the circumstances. In the market it is assumed that this would be at least £5,000,000 plus an amount to cover creditors in Cuba. Prices of the various stocks have been adjusted in the market to the proposed terms of the capital reorganisation and the assumption that a payment of at least £5,000,000 would be made in the event of a take over offer. The 1906 5 per cent debentures which of course normally have the most active market have been changing hands around 18, the 4½ per cent Cuban debentures were 45, the 4½ per cent Western debentures 19, and there have been some rather sharp movements in the Havana Terminal debentures, which are 73½ at the time of writing. The preference stock was active around 2⅜. If the capital reorganisation scheme is not approved at the meetings on November 27, it would probably mean that all hope of a reasonable settlement providing something for the 13,000 stockholders in the company (the majority of whom have not received a payment of any kind since 1930) would have to be abandoned.

White Pass & Yukon common shares have shown minor fluctuations around $23⅜ and the 5 per cent convertible debentures were £82. Canadian Pacific moved fairly closely with the trend of Wall Street, but after receding, have firmed up to $60½ at the time of writing; the 4 per cent preference stock was £65 and the 4 per cent debentures £81. Elsewhere, Antofagasta ordinary and preference were 10¾ and 51¼ respectively, Manila "A" debentures were 78 and the preference shares 8s. 4½d. In other directions, San Paulo 10s. units have been firmer at 11s. 1½d. Taltal shares were 14s. 9d. and Nitrate Rails 18s. 6d. Brazil Rail bonds changed hands up to 6⅝. Costa Rica ordinary stock showed a number of dealings around 6½. Dorada Railway ordinary stock was quoted at 46½ and the 6 per cent debentures at 97½. Guayaquil and Quito first debentures were 29.

Engineering and kindred shares were very quiet, partly because of a tendency to await the outcome of the higher wages claim, and partly because of the knowledge that the Government's plan for denationalising steel will be known shortly. Guest Keen were 53s. 6d., Vickers 43s. 3d., Cammell Laird 5s. shares 11s. 10½d., John Brown 44s. 9d., and Tube Investments 55s. 9d. Elsewhere, Ruston & Hornsby strengthened to 38s. 3d., Babcock & Wilcox have been firm and active around 71s. 6d., and T. W. Ward were 72s. 9d.

Among shares of locomotive builders and engineers, Beyer Peacock strengthened to 31s. 3d., Hurst Nelson were 47s., and North British Locomotive 14s. 3d. Gloucester Wagon 10s. shares were 12s. 4½d., Vulcan Foundry eased to 23s. 3d., and Birmingham Carriage were 32s. 6d. Charles Roberts 5s. shares have been active around 21s. 6d. on market hopes of a favourable tax settlement with the Inland Revenue. Wagon Repairs 5s. shares were 12s. 9d. Central Wagons changed hands around 92s. 7½d., and G. D. Peters 5s. shares up to 17s.

## Traffic Table of Overseas and Foreign Railways

| | Railway | Miles open | Week, or month ended | Traffics for week: This year | Traffics for week: Inc. or dec. compared with 1950/51 | No. of week | Aggregate traffics to date: Total 1951/52 | Aggregate traffics to date: Increase or decrease |
|---|---|---|---|---|---|---|---|---|
| South & Cen. America | Antofagasta ... | 800 | 10.10.52 | £ 172,510 | + £ 37,280 | 41 | £ 6,251,220 | + £ 1,359,750 |
| | Costa Rica ... | 281 | Sep., 1952 | c1,207,759 | + c73,182 | 13 | c4,064,027 | + c360,780 |
| | Dorada ... ... | 70 | Aug., 1952 | 38,470 | + 1,494 | 35 | 273,997 | − 14,450 |
| | Inter. Ctl. Amer.... | 794 | July, 1952 | $1,032,978 | − $15,127 | 30 | $7,977,146 | − $2,610 |
| | Paraguay Cent. ... | 274 | 10.10.52 | G672,695 | + G348,292 | 14 | G8,742,506 | + G3,789,971 |
| | Peru Corp. ... | 1,050 | Sep., 1952 | $9,688,000 | + $1,755,000 | 13 | $28,850,000 | + $4,333,000 |
| | " (Bolivian Section) | 66 | Sep., 1952 | Bs.15,428,000 | + Bs.1,024,000 | 13 | Bs.47,406,000 | + Bs.6,011,000 |
| | Salvador ... ... | 100 | July, 1952 | c138,000 | + c13,000 | 4 | c138,000 | + c13,000 |
| | Taltal ... ... | 122 | Sep., 1952 | $3,351,000 | + $902,000 | 13 | $8,538,000 | + $2,234,000 |
| Canada | Canadian National† | 23,473 | Aug., 1952 | 19,081,000 | + 746,000 | 35 | 147,991,000 | + 12,221,000 |
| | Canadian Pacific† ... | 17,037 | Aug., 1952 | 12,953,000 | + 866,000 | 35 | 100,059,000 | + 7,048,000 |
| Various | Barsi Light* ... | 167 | Sep., 1952 | 20,055 | − 4,297 | 26 | 189,975 | − 25,627 |
| | Gold Coast ... | 536 | Aug., 1952 | 253,854 | + 32,678 | 21 | 1,434,206 | + 152,894 |
| | Mid. of W.Australia | 277 | Aug., 1952 | 54,609 | − 6,306 | 9 | 105.559 | − 8,162 |
| | South Africa ... | 13,398 | 20.9.52 | 1,899,700 | − 42,185 | 28 | 48 692,332 | + 1,857,313 |
| | Victoria ... ... | 4,744 | June, 1952 | 1,938,478 | + 125,545 | 52 | 1,938,478 | + 125.545 |

* Receipts are calculated at 1s. 6d. to the rupee

† Calculated at $3 to £1

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